A Social Assessment of Public Knowledge, Attitudes, and Values Related to Wildland Fire, Fire Risk, and Fire Recovery

Project Report Submitted to: Joint Fire Science Program

In Accordance with: JFSP Grant (#01-1-3-30)

February 7, 2005

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Introduction

It is well known in the science community that fire is an integral component in the balance of nature necessary to maintain forest health and sustainability. However, much of the public's attitude toward fire as an important part of natural processes has been misguided, either through ignorance or through programs perpetuating public fear and misunderstanding of the vital role of fire in wildland ecosystems. Moreover, as the population encroaches further into wilderness areas, expanding the wildland urban interface, fire management becomes increasingly complex. Publicity is often very negative, with homeowners and developers advocating fire suppression to protect their investments. Unfortunately, this leads to fuel build-ups, which eventually are the cause of bigger and more catastrophic fires with devastating consequences.

Ultimately, workable management solutions to the growing fire problem in wildlands and the wildland/urban interface will require restoring fire to some degree and developing programs that gain public support of fire. As pointed out in Policy Resolution 98-013 of the 1998 Western Governors Association meeting, "The governors believe that fire policies should be based on input from a diverse group of stakeholders, professionals, and decision makers. This includes federal, state, tribal and local governments, the insurance industry, home builders, firefighter representatives, home and business owners and others." This will likely require changes from the current status quo. To effect a change in public attitudes and knowledge of fire and fire management in wildlands and adjoining areas, a concerted education and outreach program will be necessary. However, any programs designed to effectively change public attitudes will first require more in-depth knowledge of these attitudes and preferences.

Machlis et al. (2002) provide a more developed agenda for social science research necessary for federal agencies to better deal with wildland fire now and in the near future. Their needs assessment is based on a series of interdisciplinary workshops conducted between December 2000 and April 2001. These workshops identified and developed broad topic areas for social science research that include:

- Social, economic, and cultural variables as contributing factors to wildland fire,
- Social, economic, and cultural impacts of wildland fire,

- Firefighter health and safety,
- Public health and safety related to wildland fire,
- Organized capacity, decision-making, and coordination,
- Public values, attitudes, and behaviors, and
- Pathways of public communication related to wildland fire.

Among these broad topic areas for social science research pertaining to fire, a list of researchable problems related to public values, attitudes, and behaviors was identified. This list included:

- Developing a comprehensive understanding of public values, attitudes and behaviors,
- Understanding public preferences related to federal wildland management,
- Understanding relationships with key publics through ethnographic research, and
- Understanding the history of communities at risk.

The above information and analysis is needed because limited research exists regarding public knowledge of and preferences for fire management alternatives in wildlands and wildland/urban interface areas. Carol et al. (2000), in the aftermath of the Wenatchee National Forest Fires of 1994, elaborated on the importance of social assessments involving various publics' and stakeholders' views of forest and fire knowledge and beliefs into the development of any successful management scheme. Other authors have commented on the importance of holistic fire management and the need to restore fire to wildland ecosystems while at the same time dealing with a public that is generally hostile to such restoration (Blanco 1996). Studies have been done on small scales showing positive attitudes among the public and recreationists in particular with respect to prescribed burns and forest health (Patel et al. 1999; Taylor and Daniel, 1984). Wagner et al. (1998) in a study of Ontario residents found evidence of significant public support for forest vegetation management through various means with prescribed burns being more popular than chemical alternatives but less so than mechanical schemes. More recently work, supported through the interagency Joint Fire Science Program (JFSP) by Loomis et al. (2000), revealed that Florida residents from different social strata differed significantly with respect to attitudes about fire treatment programs. A number of existing site-level studies have examined localized populations' knowledge, attitudes, values, and preferences related to wildfire and fire management. Recent examples of such studies include Winter et al. (2002), and a series of site-specific studies done by Shindler, Brunson, and Toman. However, we know of no studies at the broader national level.

Objectives

This study focuses on the broad topic of public values, attitudes, and behaviors toward wildfire. More specifically, this study is intended to contribute to development of a comprehensive understanding of public values, attitudes and behaviors and to understanding public preferences related to fire and wildland management. Unlike previous and ongoing research, the current study is aimed to provide national or "macro" level information. The primary project objectives are to:

1. Obtain knowledge, attitude, and preference information from the general public regarding fire, fire risk, and fire management in wildland and wildland/urban interface areas;
2. Identify and measure factors which condition individual responses toward fire, fire risk, fire management;
3. Test hypotheses relating to various social strata and fire knowledge and preferences;
4. Identify and develop market segments that can be specifically targeted by education and outreach efforts designed to enhance public understanding and support for science-based fire management regimes.

The remainder of the report is organized as follows. In the next section, survey methods and procedures including the survey questionnaire, sampling, and post-sample weighting are described. This is followed by the first of two results sections. The first results section provides basic descriptive statistics with population-weighted responses to all questions from each of the sections in the fire module – experience, knowledge, and attitudes/preferences. In addition, this section includes descriptive statistics detailing the breakdowns of responses across a number of socioeconomic categories including gender, race, education, income, age; and spatial variables such as household setting (rural, urban, near urban), and region of the country (North, South, Rocky Mountain and Great Plains, Pacific). This section also presents regression results for each of the survey questions. These regression results explore the statistical and practical significance of various socio-economic factors in conditioning individual responses to the fire questions. The second results section presents a market segmentation analysis. The final portion of the report contains conclusions and implications. References and five appendices follow the conclusions. These appendices contain survey questions, variable descriptions, descriptive statistics, regression results, and a primer on the regression modeling approaches.

Survey Methods

The data collection methodology for the study is based on designing, developing, and implementing a broad-based national fire module to include with the ongoing National Survey on Recreation and the Environment (NSRE 2000). NSRE2000 is the latest of eight national surveys focusing on public outdoor recreation behavior and environmental attitudes. The NSRE2000 surveying effort began in July 1999 and continued through November 2004. During that time over 85,000 interviews were conducted across 18 separate versions (approximately 5,000 observations per version). This surpassed the initially targeted minimum of 50,000 completed responses, a number high enough to enable generation of the state-level population parameter estimates related to recreation behavior. The survey is telephone-administered via CATI programs and random digit dialing through the Survey Research Center at the University of Tennessee, Knoxville. A stratified random sampling procedure is used.

As the name implies, NSRE2000 reflects not only continuing interest in outdoor recreation, but also a growing interest in the natural environment and the management of public lands. So, in addition to questions about recreation participation, constraints, and demographics, there are now many more questions dealing with knowledge of natural land issues, environmental attitudes, preferences for public land objectives, and values of wilderness. Central among the objectives of NSRE2000 is estimation of proportions and numbers of the population participating in outdoor recreation activities. A second major purpose is to estimate the distribution of participation by region and state in the U.S. Third, the NSRE is designed to probe the public's opinions and stated values with regard to the natural environment in general, public lands more specifically, and protected systems of public lands, such as the National Wilderness Preservation System.

Typically, a single version of the instrument includes five modules with an average response time of 15 to 20 minutes. The recreation participation and demographics modules (with slight modifications) are included in all versions of the survey. The remaining three modules in each version consist of specialized questions pertaining to the issues described above. These modules may include sets of questions covering environmental attitudes, objectives for public land management, attitudes toward and values gained from protected wilderness, knowledge of the

National Wilderness Preservation System, lifestyle indicators, leisure, rural land ownership, interest in farm-based recreation, and other more specific questions. For example, of specific interest to the Forest Service (among a number of other question sets) are questions dealing with fees charged for recreation access to National Forests. A minimum of 2,000 responses is obtained per module.

After collection, data are weighted according to a post sample stratification procedure appropriate to the desired aggregate (Holt & Smith, 1979). It is the most appropriate method for adjusting sample proportions to reflect the national population, i.e., to correct for the under- or over-representation of social strata in a sample (Zhang, 2000). In this case, the data are weighted according to a combination of five difference strata: age, race, gender, education, and origin setting (rural vs. non-rural). Post-stratification has been successfully applied in similar national surveys in the U. S. and in other countries (Thomsen & Halmoy, 1998).

For NSRE2000, a total of 60 strata (6 age x 2 sex x 5 race) were first identified to match identical strata in the U.S. Census. Each individual stratum weight, SW_i, is the ratio of the Census population proportion to the NSRE2000 sample proportion:

$$Sw_i = P_i / p_i$$

where P_i = U.S. Census proportion for strata i

p_i = NSRE 2000 sample proportion for strata i

A weight Sw_i >1.0 indicates that the particular stratum was a smaller proportion of the sample than of the U. S. population based on Census estimates. Likewise, weights with a value less than 1.0 indicated that the stratum was randomly sampled in greater numbers than their proportion of the U.S. population age 16 and over. A unitary weight, that is, no adjustment, means the sample strata was sampled at the same rate as its proportion of the population. Each individual respondent was assigned to one and only one of the 60 age-sex-race strata and thus assigned a Sw_i for that stratum.

An additional step was taken to account for the sampling proportions of two other socioeconomic strata: educational attainment and place of residence (rural/urban). Weights for each of these were calculated separately in a similar fashion to the age-sex-race weight. The education weight, Ew_i, is the ratio of Census: sample proportions for nine different levels of educational attainment, ranging from "8th grade or less" to "Doctorate Degree." The residence weight, Rw_i, is simply the ratio of the percentage of the U.S. population living either in metropolitan statistical areas or not divided by their counterparts in the NSRE2000 data. This was adjusted for the fact that urban or metropolitan residents were slightly under sampled in the survey. A single weight, W_i, for each individual survey respondent was then calculated as the product of the three intermediate weights:

$$W_i= Sw_i \text{ C } Ew_i \text{ C } Rw_i$$

The largest composite weights, therefore, were applied to respondents whose numbers were under represented in the total sample. The smallest weights were applied to strata that were over-represented. The sample had a potential total of 1,080 (60 x 9 x 2) unique weights, with each individual assigned a weight, W_i, depending on his or her combination of the three intermediate weights.

For the present study a fire module was developed for NSRE2000 containing a battery of questions pertaining to knowledge, attitudes, and preferences toward fire and fire management in wildland and wildland/urban interface areas (Appendix A). Questions were developed via consultation with fire scientists, social scientists, managers, and local focus groups. Resource limitations precluded extensive focus group pretesting across the country. Surveying proceeded in two time periods in two versions of the survey, Version 14 and Version 16. Version 14, further pretested over the phone in July 2002, was administered from late July 2002 through late March 2003. Version 16, also further pretested over phone in October 2003, was administered from early November 2003 through late February 2004. For each version, the targeted number of completed interviews was 3500.

Results I – Descriptive Statistics and Regression Models

In this section, we report responses to each of the 39 fire module questions contained in Appendix A. Because of the large number of questions, we break the responses down according to three general topic groups – experience, knowledge/opinion, and attitudes/preferences. It should be noted that unlike more focused, site-specific studies, the questions are relatively broad.

Completed responses to Version 14 and Version 16 questionnaires of NSRE2000 totaled 3,476 and 3,503 respectively. For purposes of this report, the data from each version are pooled resulting in a total of 6,979 observations. As discussed in the Survey Methods section above, these responses were post-sample weighted to approximate Census proportions for the country as a whole. Here, we report on the questions and the responses. Breakdowns of the responses within categories for gender, race, education, household income, age, region, and population density of residence are reported in Tables 1-39 of Appendix C.

In this section of the report, we also conduct regression analyses to identify, statistically test, and measure the effects of various socioeconomic and spatial factors that condition individual responses toward fire, fire risk and fire management. Due to the nature of our survey questions and responses, we employ nonlinear qualitative response models for our analyses. The explanatory variables used in the regression models include socioeconomic variables like age, gender, race/ethnicity, education, income, immigration status, and employment status. Also included are spatial variables such as population density and regions of the country. The definitions of these explanatory variables can be found in Appendix B. All regression equations were estimated using the software package LIMDEP (Greene 2002). The five percent level of significance was used as a general guideline for initial variable selection, however, we also tried to maintain consistency across the large number of models. Regression equations for the 39 questions in the NSRE2000 fire module and an additional knowledge index are reported in Appendix D, Tables 1-40.

Experience

The first component of the Experience Section contained five binary response questions (Yes/No) examining various aspects of the respondent's experience with forest fire. The idea was to establish some basic indicators of the general public's experience with forest fire. Questions and responses are reported in Table E1.

Table E1. Experience of the general public with forest fire (Census weighted, n=6979).

	Yes	No	Don't know/ Refused
	(Percent)		
Have you seen, heard, or read, about forest fires in the past 3 months?	77.13	21.87	1.00
Have you ever witnessed a forest fire?	30.80	69.02	0.18
Have you ever seen a forest or rangeland soon after a fire burned through it?	60.42	39.38	0.20
Have you ever altered your recreation or vacation plans because of a forest fire?	14.36	85.55	0.08
Has forest fire smoke ever affected your visibility while traveling by car or by air?	31.23	68.48	0.29

These results suggest that in spite of national media coverage of forest fires during and after the 2002 and 2003 fire season, more than 20 percent of the general public above the age of 16 had basically no contact with forest fire information, either through the media or in person. Historically, nearly a third of the public had actually witnessed a forest fire of some sort and about the same percentage of the population had their visibility affected while traveling by smoke from a forest fire. Nearly 15 percent of the public has had their vacation or recreation plans altered by forest fire.

Examining the cross-tabs in Tables 1-5 of Appendix C, it appears that a number of qualitative patterns pertaining to general experience with forest fire can be related to underlying socio-demographic and spatial characteristics (These variables are defined in Appendix B). For example, males are more likely than females to have answered positively to any of the questions above. Whites are more likely than blacks or Hispanics to have experience with forest fire. Experience with fire also appears to be positively related to one's education level, but less so with age group. Regional location also appears highly correlated with fire experience. Across each of the five basic experience questions, the percentage responding affirmatively was substantially higher in the Rocky Mountain and Pacific regions than in either the North or South. Fire experience also appears to be related inversely to the population density in the vicinity of the respondent's household (urban, near urban, and rural). It should be noted that formal regression models testing and quantifying these differences are reported in Appendix D and discussed in a later section of this report.

Binary logistic equations were estimated for each of the five questions above, and details on the estimated equations can be found in Appendix D, Tables 1-5. A discussion of the modeling procedures can be found in Appendix E. The probability associated with a particular response can be computed using information from the estimated equations. For example, the probability of having seen, heard, or read about forest fires (Q1) around the time of our first survey for an urban, 20 year-old, employed, US-born, White female, who has had 16 years of education and an annual income of about $36,300, and who lives in the South would be 0.75. The probability is 0.68 for a black female, and 0.71 for a Hispanic female with similar demographic characteristics. Comparing between genders, the probability for a white male with the above demographic characteristics would be 0.81; 0.75 for a black male, and 0.77 for a Hispanic male. (A complete comparative statics spreadsheet tool is available from the authors allowing the user to quickly calculate response probabilities for all question and variable combinations).

The probability of having witnessed a forest fire (Q2) for a suburban, 35 year-old, employed, foreign-born, Hispanic male in our first survey, who has had 16 years of education and an annual income of about $36,300, and who lives in the North would be 0.29. The probability lowers to 0.20 for a US-born Hispanic male with similar demographic characteristics. The probability decreases to 0.11 for a US-born Hispanic female with similar characteristics. The probability, however, rises to 0.21 for a US-born White female, 0.35 for a US-born White male, and 0.47 for a foreign-born white male with the same demographic characteristics.

The probability of having seen a forest after burn (Q3) for a rural, 55-year-old, employed, US-born, White female in our first survey, who has had 16 years of education and an annual income of about $59900, and who lives in the Pacific Coast would be 0.90. The probability is almost the same (0.89) for a resident with similar characteristics in the Rocky Mountains and the Great Plains. For a resident in the North with the same demographic characteristics, the probability decreases to 0.68; and for a resident in the South, 0.79.

The probability of having changed recreation plans because of a forest fire (Q4) for a rural, 55-year-old, employed, US-born, white female in our first survey, who has had 16 years of education and an annual income of about $59,900, and who lives in the Pacific region would be 0.43. The probability decreases slightly to 0.41 for a person who has the same demographic characteristics but earns roughly $40,100 per year. For a person who earns about $22,000 a year and unemployed during the first survey, but has the same remaining demographic characteristics, the probability drops to 0.34.

The probability of having visibilities affected by forest fire smoke while traveling by car or by air (Q5) for an urban, 40-year-old, employed, US-born, white male in our second survey, who has had 14 years of education and an annual income of about $40,100, and who lives in the North would be 0.21. For an individual with the same demographic characteristics in our first survey, the probability rises to 0.26.

We observe specific patterns for each of the explanatory variables in the estimated binary logistic equations that enable us to identify factors that explain individuals' fire experiences.

Age. The variable age was positive and statistically significant in all estimated equations except the equation for Q4. This implies that as age increases one's chances of having a fire-related experience increase. An older person is more likely to have seen or heard about forest fires in the news, more likely to have witnessed a forest fire and seen a forest after burn, and whose visibility is more likely to have been affected by forest fire smoke.

Gender. Regression results show that females had less fire experience than males. The variable female was negative and statistically significant in all estimated equations except the equation for Q4. This implies that females are less likely to have seen or heard about forest fire in the news, less likely to have witnessed a forest fire and seen a forest after burn, and whose visibilities are likely to have been affected by forest fire smoke.

Race/Ethnicity. Those who were classified as black had less fire experience compared to those classified as white. The variable NONWH2 (black) was negative and statistically significant in all five estimated logistic equations, with white in the base (therefore excluded from equations). The coefficient on black is thus interpreted relative to the base. Statistical results indicate that, relative to those who are white, blacks are less likely to have heard about forest fire around the time of survey, less likely to have witnessed a forest fire, less likely to have seen a forest after burn, and less likely to have altered their recreation plans due to forest fires, and their visibilities are less likely to have been affected by forest fire smoke while traveling.

The variable NONWH3 (Hispanic) was negative and statistically significant in the estimated equations for Q2, Q3 and Q5. This implies that, relative to those who are white, Hispanics are less likely to have witnessed a forest fire in the past, seen a forest after a burn, and their visibilities are less likely to have been affected by forest fire smoke. The estimated logistic equations for Q1 and Q4 did not yield any statistically significant variations between Hispanics and whites.

Education. As a respondent's years of education increase, fire experience increases. The variable EDUC_YR (measured by years of formal education) was statistically significant with positive signs on the coefficients for all five estimated equations. This unambiguously implies that people with more education tend to have more fire experience.

Income. As household income increases fire experience increases. The variable LNINC1 (natural log of income) was statistically significant with positive signs on the coefficients for all five estimated equations. This unambiguously implies that people from higher income households tend to have more fire experience.

Immigration Status. The variable NONUS is a binary variable for respondents who were foreign-born (with US-born citizen as the base). The coefficient on NONUS is thus interpreted relative to the base. The estimated logistic equations for Q1, Q4 and Q5 did not yield any statistically significant differences in fire experience between immigrants and US citizens. However, for Q2, the estimated logistic model coefficient on NONUS (immigrants) was positive and statistically significant meaning that immigrants are more likely to have witnessed a forest fire in the past. The estimated logistic model coefficient on NONUS was negative and statistically significant for Q3, implying that immigrants are less likely to have seen a forest or rangeland soon after a fire burned through it. The results for these last two equations seem to be somewhat contradictory.

Population Density. The variable NONRU2 is a binary variable for residents of urban areas, and the variable NONRU3 is a binary variable for residents of suburban areas, with residents of rural areas in the base. The coefficients on NONRU2 and NONRU3 are thus interpreted relative to the base. The variable NONRU2 (urban) was negative and statistically significant in all estimated logistic equations except Q4, implying that, compared to residents of rural areas, urban residents are less likely to have heard about forest fire around the time of survey, less likely to have ever witnessed a forest fire, less likely to have seen a forest after burn, and their visibilities are less likely to have been affected by forest fire smoke while traveling. Regression results for Q1, Q3 and Q4 indicate that there was no statistically significant difference in fire experience between suburban residents and rural residents. However, the variable NONRU3 (suburban) was negative and statistically significant in the estimated logistic equations for Q2 and Q5. This implies that, compared to residents of more rural areas, suburban residents are less likely to have witnessed a forest fire and their visibilities are less likely to have been affected by forest fire smoke while traveling.

Regions. Individuals in our survey are divided into four geographical regions based upon their respective FIP codes. We expect that different geographical locations would reflect different levels of fire experience among individuals. REGION1 (North) is the base and is therefore excluded from the equations). The coefficients on REGION2, REGION3 and REGION4 are thus interpreted relative to the base.

The variable REGION2 (South) was positive and statistically significant in the estimated logistic equations for Q2 through Q5. This implies that, relative to residents in the North, residents in the South are more likely to have witnessed a forest fire in the past and more likely to have seen a forest after a fire burned through it. They are also more likely to have altered their recreation plans due to forest fires. Additionally, their visibilities are more likely to have been affected by forest fire smoke.

The variable REGION3 (Rocky Mountains and the Great Plains) was positive and statistically significant in all five estimated logistic equations. This implies that, relative to residents in the North, residents in the Rocky Mountains and the Great Plains are more likely to have seen or heard about forest fires around the time of survey, more likely have witnessed a forest fire, more likely to have seen a forest after burn, and more likely to have altered their recreation plans due to forest fires. Additionally, their visibilities are more likely to have been affected by forest fire smoke.

The variable REGION4 (Pacific) was positive and statistically significant in all five estimated logistic equations. This implies that, relative to residents in the North, residents in the Pacific Coast are more likely to have seen or heard about forest fires around the time of survey, more likely have witnessed a forest fire, more likely to have seen a forest after burn, and more likely to have altered their recreation plans due to forest fires. Additionally, their visibilities are more likely to have been affected by forest fire smoke.

Employment Status. We used a binary variable UNEMPLOY for individuals who claimed to be unemployed (not currently working, students, or retired). The variable UNEMPLOY was positive and statistically significant in the estimated logistic equation for Q1. This implies that unemployed individuals are more likely to have seen, heard or read about forest fire around the time of survey. As for Q2 through Q5, the variable UNEMPLOY was negative and statistical significant in the estimated logistic equation. This implies that unemployed individuals are less likely to have ever witnessed a forest fire, less likely to have seen a forest after burn, and less likely to have changed their recreation plans due to forest fire. Additionally, their visibilities are less likely to have been affected forest fire smoke while traveling.

Survey Time Frame. We included a binary variable NEWDATA to reflect the two time periods during which our survey was conducted to identify whether there is any variation in fire experience among respondents in those two survey time frames. The two surveys were conducted about 1 year apart. The value of NEWDATA is one for respondents in our second survey (48 percent of overall sample); hence the value of NEWDATA is zero for respondents in our first survey (which is the base).

The variable NEWDATA was negative and statistically significant in the estimated logistics equations for Q1, Q2, Q4 and Q5. This implies that, relative to respondents in the first survey, respondents in the second survey are less likely to have seen or heard about forest fires around the time of survey. They are less likely to have witnessed a forest fire and altered their recreation plans due to forest fires. Additionally, their visibilities are less likely to have been affected by forest fire smoke while traveling.

The estimated logistic equation for Q3 indicates that there was no statistically significant difference among respondents in the two surveys with respect to seeing a forest after burn. While somewhat puzzling, these results may be linked to the severity and consequent press coverage of the fire seasons which immediately preceded the two survey time periods.

Questions 6 and 7

Questions 6, 7 of the Experience Section assess the respondent's subjective likelihood that a forest fire would occur within 10 miles of their home and their corresponding level of concern that fire would damage their home. (Individuals who thought a forest fire was very unlikely near their home were presumed to be unconcerned about their homes being damaged by forest fire.) The general population proportions are reported in Table E2. As evidenced in Table E2, nearly 40 percent of the general public thinks that there is at least some likelihood that a forest fire could occur within 10 miles of their residence. However, only half of these or 20 percent of the public has any concern that their home could be damaged by forest fire. More than half of this group reports being only slightly concerned.

Table E2. Forest fire likelihood within 10 miles and potential for damage to residence (Census weighted, n=6979).

	Very likely	Somewhat likely	Very unlikely	Don't know/ Refused
	(Percent)			
How likely do you think a forest fire could occur within 10 miles of your home?	19.83	18.96	60.62	0.59
	Concerned	Slightly concerned	No concern	Don't know/ Refused
	(Percent)			
How concerned are you that your home could be damaged by forest fire?	8.92	10.95	79.94	0.19

Detailed cross-tabs by socioeconomic and spatial factors for both questions in Table E2 are reported in Tables 6 and 7 of Appendix C. Regarding the likelihood of fire within 10 miles, gender, age, education, and income do not appear to show large practical differences in response percentages. However, only 40 percent of rural residents felt very unlikely that a forest fire would occur within 10 miles of their home, while 62 percent of urban residents, and 47 percent of near urban residents felt that way. Regionally, more than 30 percent of Rocky Mountain and Pacific residents felt that a forest fire was very likely to occur within 10 miles of their home. Whites (23 percent) felt fire was more likely to occur near their home than blacks or Hispanics (18 percent).

Concern of fire damage to one's home showed a different pattern of relationships to socioeconomic and spatial factors than did likelihood of fire occurrence (Appendix C, Table 7). Interestingly, percentages within the concerned category were noticeably higher among blacks (13 percent), no college (12 percent), lower income (12 percent), and elderly (10 percent) than the alternatives among the socioeconomic factors. Moreover, while likelihood of fire was perceived to be higher in the Rocky Mountain and Pacific Regions, the proportion of residents falling into the concerned category was higher in the South (10 percent) and Pacific (12 percent) than either of the other regions.

Ordered logistic equations were estimated for each of the two questions above. Details on the estimated equations can be found in Appendix D, Tables 6-7. This is an accepted modeling procedure when the qualitative response variable includes more than two responses, and the responses are ordered in relative magnitude (Appendix E). For Q6, the response variable Y takes on values 0 for "Very Likely", 1 for "Somewhat Likely", and 2 for "Very Unlikely". For Q7, the response variable Y takes on values 0 for "Concerned", 1 for "Somewhat Concerned", and 2 for "Not Concerned". It should be noted that respondents who answered "Very Unlikely" to Q6 were directed to skip Q7 during the survey. We assume that these respondents would answer "Not Concerned" to Q7 since they thought a forest fire occurring near their homes was very unlikely.

We observe specific patterns for each of the explanatory variables in the estimated equations, which enable us to identify factors that affect people's responses to these two experience (risk assessment) statements.

Age. The estimated ordered logistic model for Q6 did not yield any statistically significant variation in fire risk attitudes among individuals of different years of age. The variable age, however, was positive and statistically significant in the estimated ordered logistic equation for Q7. The coefficient estimate of 0.003 indicates that the role of age is rather small, and the positive sign implies that as age increases concern about home being damaged by forest fire decreases. An older person is less likely to be concerned about his/her home being damaged by forest fire.

Gender. Regression results show that females tend to be less secured when it comes to the possibility of a forest fire occurring near their homes. The variable female was negative and statistically significant in the estimated ordered logistic equations for Q6 and Q7. This implies that compared to males, females tend to think that the event of a forest fire occurring near their homes is likely, and they are more concerned about their homes being damaged by forest fire.

Race/Ethnicity. Those who were classified as black tended to think that the occurrence of a forest fire occurring near their homes was unlikely compared to those who were classified as white. The variable NONWH2 (black) was positive and statistically significant in the estimated ordered logistic equation for Q6, with white in the base (therefore excluded from equations). The coefficient on black is thus interpreted relative to the base. The estimated ordered logistic model for Q7, however, did not yield any statistically significant variation in fire risk attitudes among individuals classified as black and those classified as white. The variable NONWH3 (Hispanic) was positive and statistically significant in the estimated ordered logistic equations for Q6 and Q7. This implies that, relative to those who are white, Hispanics tend to think that the event of a forest fire occurring near their homes is unlikely, and they are less concerned about their homes being damaged by forest fire.

Education. The estimated ordered logistic model for Q6 did not yield any statistically significant variation in fire attitudes among individuals with different years of education. The variable EDUC_YR (measured by years of education received), however, was positive and statistically significant in the estimated ordered logistic equation for Q7. The positive sign on the coefficient implies that as education increases concern about home being damaged by forest fire decreases. A more educated person is less likely to be concerned about his/her home being damaged by forest fire.

Income. The estimated ordered logistic models for both Q6 and Q7 did not yield any statistically significant variation in fire risk attitudes among individuals with different earnings.

Immigration Status. For Q6, the estimated ordered logistic model coefficient on NONUS (immigrants) was positive and statistically significant meaning that immigrants tend to think that the event of a forest fire occurring near their homes is unlikely compared to nonimmigrants. The estimated logistic equations for Q7 did not yield any statistically significant differences in fire risk attitude between immigrants and US citizens.

Population Density. As expected, the variable NONRU2 (urban) was positive and statistically significant in the estimated ordered logistic equations for Q6 and Q7, implying that, compared to residents of rural areas, urban residents tend to think that the event of a forest fire occurring near their homes is unlikely, and they are less concerned about their homes being damaged by forest fire. The estimated ordered logistic models for both Q6 and Q7 did not yield any statistically significant variation in fire risk attitudes among rural residents and suburban residents (NONRU3).

Regions. The variable REGION2 (South) was negative and statistically significant in the estimated ordered logistic equations for both Q6 and Q7. This implies that, relative to residents in the North, residents in the South tend to think that the event of a forest fire occurring near their homes is more likely, and they are more concerned about their homes being damaged by forest fire.

The variable REGION3 (Rocky Mountains and the Great Plains) was negative and statistically significant in the estimated ordered logistic equations for Q6. This implies that, relative to residents in the North, residents in the Rocky Mountains and the Great Plains tend to think that the event of a forest fire occurring near their homes is more likely. The estimated ordered logistic model for Q7 did not yield any statistically significant variation in fire risk attitudes among individuals in the North and individuals in the Rocky Mountains and the Great Plains.

The variable REGION4 (Pacific) was negative and statistically significant the estimated ordered logistic equations for both Q6 and Q7. This implies that, relative to residents in the North, residents in the Pacific Coast tend to think that the event of a forest fire occurring near their homes is more likely, and they are more concerned about their homes being damaged by forest fire.

Employment Status. The variable UNEMPLOY was positive and statistically significant in the estimated ordered logistic equation for Q6. This implies that unemployed individuals are more likely to think that the event of a forest fire occurring near their homes is unlikely. The estimated ordered logistic model for Q7 did not yield any statistically significant variation in fire risk attitudes among individuals who are employed and individuals who are not employed.

Survey Time Frame. The variable NEWDATA was positive and statistically significant in the estimated ordered logistics equations for both Q6 and Q7. This implies that, relative to respondents in the first survey, respondents in the second survey tend to think that the event of a forest fire occurring near their homes is less likely, and they are less concerned about their homes being damaged by forest fire. This result is potentially interesting as it begs the "why" question.

Questions 8A-8E

The final questions (8A-8E) in the Experience Section examine respondent use of various practices to protect their home and property from the effects of forest fire. These practices include clearing vegetation and debris, herbicide application, purchasing insurance, maintaining fire-fighting equipment, and burning undergrowth. In Table E3, percentages are reported for all respondents. In Table E4, percentages are reported conditional upon the respondent believing that a forest fire is either very likely or somewhat likely within 10 miles of their home. These results and corresponding cross-tabs by socioeconomic and spatial factors are reported in Tables 8-12 of Appendix C.

Table E3. Do you do any of the following to protect your home from forest fire? (Census weighted, n=6979).

	Yes	No	Don't know/ Refused
	(Percent)		
Keep leaves, shrubs, trees, and vegetation cleared near buildings.	29.21	70.32	0.47
Spray herbicides to control undergrowth.	10.52	88.56	0.93
Purchase property insurance.	27.98	70.34	1.68
Keep extra hoses and firefighting equipment around.	24.33	75.35	0.31
Routinely burn undergrowth around your home	6.51	93.13	0.37

Table E4. Do you do any of the following to protect your home from forest fire? (Census weighted, n=3055, conditional on "very likely" or "somewhat likely" response for forest fire within 10 miles of residence).

	Yes	No	Don't know/ Refused
	(Percent)		
Keep leaves, shrubs, trees, and vegetation cleared near buildings.	74.16	24.63	1.21
Spray herbicides to control undergrowth.	26.70	70.95	2.35
Purchase property insurance.	71.05	24.70	4.25
Keep extra hoses and firefighting equipment around.	61.79	37.42	0.78
Routinely burn undergrowth around your home	16.52	82.55	0.93

The percentages in Tables E4 make it very clear that keeping vegetation cleared near buildings (74 percent) is the most popular averting practice for residents that felt forest fire was at least a somewhat likely possibility within 10 miles of their home. Surprisingly, this percentage was higher than those maintaining property insurance protection (71 percent). However, this result may be due to an unclear understanding of the question and the fact that renters may not be paying directly for the insurance. Nearly 62 percent of the conditional respondents kept some fire-fighting equipment on hand. Using herbicides (27 percent) and controlled burning (17) were far less popular practices. A number of factors including convenience, environmental attitudes, and local regulations are likely to have influenced these results.

Regression models for the five home fire prevention statements were developed only for those answering "Very Likely" or "Somewhat Likely" to Q6, as thus the sample is the same as that for responses in Table E4. Binary logistic equations were estimated for each of the five statements. Details on the estimated equations can be found in Appendix D, Tables 8-12. The roles of each explanatory variable are discussed below.

Age. The variable age was positive and statistically significant in the estimated logistic equations for Q8A, Q8C and Q8D. This implies that an older person is more likely to keep the area surrounding of their homes cleared, more likely to purchase property insurance, and more likely to keep firefighting equipment around. Age was negative and statistically significant in the estimated logistic equations for Q8E, implying that as age increases burning undergrowth around home decreases. Age was positive but statistically insignificant in the estimated logistic model for Q8B, indicating age did not help to explain herbicide use to control undergrowth.

Gender. The variable female is statistically insignificant in the estimated logistic equations for Q8A, Q8B and Q8E. The variable female was positive and statistically significant in the estimated logistic equations for Q8C and Q8D. This implies that compared to males, females are more likely to spray herbicides to control undergrowth, and they are also more likely to purchase property insurance.

Race/Ethnicity. The variable NONWH2 (black) was statistically insignificant in the estimated logistic equations for all questions except Q8C. The variable NONWH2 was negative and statistically significant in the estimated logistic equation for Q8C, implying that, relative to those classified as white, those classified as black are less likely to purchase property insurance. The variable NONWH3 (Hispanic) was statistically insignificant in the estimated logistic equations for all five questions. This result thus implies that while there appear racial differences in fire experience, race does not appear to explain adoption of fire prevention practices among those individuals who feel their property is at risk.

Education. The variable EDUC_YR (measured by years of education received) was negative and statistically significant in the estimated logistic equations for Q8A, Q8B and Q8D. This implies that a more educated person is less likely to be keep the surrounding of his/her house cleared, less likely to use herbicides and less likely to keep firefighting equipment around. The variable EDUC_YR was statistically insignificant in the estimated logistic equations for Q8C and Q8E. This result suggests that while formal education influences one's experience with fire, it does not imply a greater likelihood of the use of fire prevention practices.

Income. The variable LNINC1 (natural log of income) was positive and statistically significant in the estimated logistic equations for Q8A, Q8B and Q8C. This implies that people with higher earnings are more likely to keep the area surrounding their house cleared, more likely to use herbicides, and more likely to purchase property insurance as fire averting behaviors. However, LNINC1 was statistically insignificant in equations for Q8D and Q8E.

Immigration Status. The variable NONUS (immigrants) was statistically insignificant in the estimated logistic equations for Q8A, Q8C, Q8D and Q8E. However, it was negative and statistically significant in the estimated logistic equation for Q8B, implying that, relative to US citizen, immigrants are less likely to use herbicides to control undergrowth around their property as fire prevention.

Population Density. The variable NONRU2 (urban) was statistically insignificant in the estimated logistic equations for Q8A through Q8C. However, it was negative and statistically significant in the estimated logistic equations for Q8D and Q8E. This implies that, relative to rural residents, urban residents are less likely to keep extra hoses and firefighting equipments around their homes, and they are also less likely to burn undergrowth around their homes. Similarly, the variable NONRU3 (suburban) was statistically insignificant in the estimated logistic equations for Q8A through Q8C. However, it was negative and statistically significant in the estimated logistic equations for Q8D and Q8E. This implies that, relative to rural residents, suburban residents are less likely to keep extra hoses and firefighting equipments around their homes, and they are also less likely to burn undergrowth around their homes.

Regions. The variable REGION2 (South) was positive and statistically significant in the estimated logistic equations for all questions except Q8C. This implies that, relative to residents in the North, residents in the South are more likely to keep the surrounding of their house cleared, more likely to use herbicides, more likely to keep extra firefighting equipments, and more likely to burn undergrowth around their homes. The estimated logistic model for Q8C did not yield any statistically significant variation in fire prevention attitudes among individuals in the two regions.

The variable REGION3 (Rocky Mountains and the Great Plains) was negative and statistically significant in the estimated logistic equations for Q8C. This implies that, relative to residents in the North, residents in the Rocky Mountains and the Great Plains are less likely to purchase extra property insurance. The variable REGION3 was statistically insignificant in the estimated logistic equations for Q8A, Q8B, Q8D and Q8E.

The variable REGION4 (Pacific Coast) was positive and statistically significant in the estimated logistic equation for Q8B. This implies that, relative to residents in the North, residents in the Pacific Coast are more likely to use herbicides to control undergrowth. The variable REGION4 was statistically insignificant in the estimated logistic equations for Q8A, Q8C, Q8D and Q8E.

Employment Status. The variable UNEMPLOY was negative and statistically significant in the estimated logistic equation for Q8C. This implies that unemployed individuals are less likely to purchase property insurance. The variable UNEMP was statistically insignificant in the estimated logistic equations for Q8A, Q8B, Q8D and Q8E indicating that for the most part, employment status has little to do with these types of fire averting behavior.

Fire Experience. Because the news that people get from the media may have an influence on their fire prevention actions, we created a new binary variable F1NEW for respondents who have seen, heard, or read about forest fires around the time of survey (who previously answered "Yes" to Q1). Regression results show that this binary variable was positive and statistically significant in the estimated equations for Q8B and Q8D implying that those who have recently seen or heard about forest fires are more likely to use herbicides and more likely to keep extra hoses and firefighting equipment around their homes. However, the variable F1NEW was statistically insignificant in the estimated logistic equations for Q8A, Q8C and Q8E.

Fire Risk Attitudes. We created two new binary variables to examine whether risk attitudes have any influence on fire prevention. We created a binary variable F6NEW based upon individuals' responses to Q6. The variable F6NEW=1 for "Very Likely".
We also created a binary variable F7NEW based upon individuals' responses to Q7 where, F7NEW=1 for "Concerned" or "Somewhat Concerned".

The variable F6NEW was statistically insignificant in the estimated logistic equations for Q8A through Q8D. However, it was positive and statistically significant in the estimated logistic equation for Q8E, implying that, an individual who thinks the event of a forest fire occurring near their homes is likely tends to burn undergrowth around his/her home.

The variable F7NEW was positive and statistically significant in the estimated logistic equations for all five questions. This implies that individuals who are concerned or somewhat concerned about fire damaging their homes tend to keep the surrounding of their houses cleared. Relative to those who are not concerned about fire damage, they are also more likely to use herbicides, more likely to purchase extra property insurance, more likely to keep extra hoses and firefighting equipment, and more likely to burn undergrowth around their homes. The implication here is that if one's concern level can be raised, the likelihood of adopting fire-averting behavior will be increased.

Survey Time Frame. The variable NEWDATA was negative and statistically significant in the estimated logistic equation for Q8C. This implies, that in this sub-sample, individuals in our second survey are less likely to purchase property insurance. The variable NEWDATA was statistically insignificant in the estimated logistic equations for Q8A, Q8B, Q8D and Q8E. This result suggests that across the two surveys, administered about a year apart, there has been no increase in the likelihood of residents employing fire prevention behaviors around their residences. The result applies to those who felt that a forest fire within 10 miles of was "somewhat likely" or "very likely."

Knowledge

The fire Knowledge Section of the questionnaire contained 11 questions aimed at categorizing the general public's basic knowledge or opinions about various aspects of forest fire. Among the issues were differences between wildfire and prescribed fire, fire occurrence, and ecological aspects of forest fires (see Appendix A, Knowledge Section, Questions 9, 10A-E, 10aA-E). The first question, and most basic, simply asked respondents if they knew the difference between wildfire and prescribed fire (Table K1.) More than 75 percent of the general public indicated that they did know the difference.

Table K1. Percent of general population claiming to know the difference between wildfire and prescribed fire. (Census weighted, n=6979).

	Yes	No	Don't know/ Refused
	(Percent)		
Do you know the difference between wildfire and prescribed fire (controlled burn)?	75.32	23.78	0.89

Cross-tabs by socioeconomic and spatial variables for this question are reported in Appendix A, Table 13. The largest differences within socioeconomic factors appear to be along racial lines. Eighty-six percent of whites indicated knowing the difference between wildfire and prescribed fire compared to 62 percent of Hispanics and 57 percent of blacks. The patterns for other variables generally followed responses to questions in the Experience Section.

A binary logistic equation was used to model yes/no responses for Q9. Details for this model are contained in Appendix D, Table 13. The probability of knowing the difference between the two types of fire can be computed using information from the estimated equation. For example, the probability of knowing the difference between wildfire and prescribed fire for an urban, 20 year-old, employed, US-born, white female in our first survey, who has had 16 years of education and an annual income of about $36,300, and who lives in the South would be 0.80. The probability is

0.58 for a black female and a Hispanic female with similar demographic characteristics. Comparing across gender, the probability for a white male with the above demographic characteristics would be 0.89 and 0.74 for either a black male or Hispanic male.

The probability for an urban, 45 year-old, employed, US-born, white male in our first survey, who has had 14 years of education and an annual income of about $36,300, and who lives in the North would be 0.89. Comparing across regions, the probability increases to 0.93 for an individual who lives in the South and has the same remaining demographic characteristics. The probability is 0.97 for a person in the Rocky Mountains and the Great Plains, and is 0.95 for a person in the Pacific Coast with the above characteristics.

The probability for an urban, 45 year-old, unemployed, US-born, white male in our first survey, who has had 14 years of education and an annual income of about $8,100, and who lives in the North would be 0.76. The probability increases to 0.84 for an employed individual with the same characteristics. The specific roles of each of the explanatory variables in the binary logistic model are discussed below.

Age. The variable age was positive and statistically significant in the estimated equation for Q9. This implies that an older person is more likely to state that he/she knows the difference between the two types of fire.

Gender. The variable female was negative and statistically significant in the estimated equation for Q9. This implies that females are less likely to think that they know the difference between the two types of fire.

Race/Ethnicity. Those who were classified as black were less likely to think that they know the difference between the two types of fires compared to those classified as white. The variable NONWH2 (black) was negative and statistically significant in the estimated equation, with white in the base (therefore excluded from equation). The coefficient on black is thus interpreted relative to the base. For example, comparing the probabilities of claiming to know the difference between prescribed and wildfire for a white vs. black male, living in the South, with household income around $40,000, and 14 years of education would be 0.89 and 0.74, respectively -- a difference of more than 15 percent.

The variable NONWH3 (Hispanic) was negative and statistically significant in the estimated equation for Q9. This implies that, relative to those who are white, Hispanics are less likely to think that they know the difference between the two types of fires.

Education. The variable EDUC_YR (measured by years of education received) was statistically significant with positive sign on the coefficient of the estimated equation for Q9. This unambiguously implies that people with more education are more likely to state that they know the difference between the two types of fire.

Income. The variable LNINC1 (natural log of income) was statistically significant with positive sign on the coefficient of the estimated equation for Q9. This unambiguously implies that people who receive higher income tend to think that they know the difference between the two types of fire.

Immigration Status. The variable NONUS is a binary variable for respondents who were foreign-born (with US-born US citizen in the base). The coefficient on NONUS is thus interpreted relative to the base. The estimated logistic model coefficient on NONUS (immigrants) was negative and statistically significant meaning that immigrants are less likely to think that they know the difference between the two types of fire.

Population Density. The variable NONRU2 is a binary variable for residents of urban areas, and the variable NONRU3 is a binary variable for residents of suburban areas, with residents of rural areas in the base. The coefficients on NONRU2 and NONRU3 are thus interpreted relative to the base.

The variable NONRU2 (urban) was negative and statistically significant in the estimated logistic equation for Q9, implying that, compared to residents of rural areas, urban residents are less likely to think that they know the difference between the two types of fire. The variable NONRU3 (suburban) was statistically insignificant in the estimated logistic equation for Q9.

Regions. Individuals in our survey are divided into four geographical regions based upon their respective FIP codes. We expect that different geographical locations would reflect different levels of fire knowledge among individuals. REGION1 (North) is the base and is therefore excluded from the equations). The coefficients on REGION2, REGION3 and REGION4 are thus interpreted relative to the base.

The variable REGION2 (South) was positive and statistically significant in the estimated logistic equation for Q9. This implies that, relative to residents in the North, residents in the South are more likely to think that they know the difference between the two types of fire.

The variable REGION3 (Rocky Mountains and the Great Plains) was positive and statistically significant in the estimated logistic equation for Q9. This implies that, relative to residents in the North, residents in the Rocky Mountains and the Great Plains are more likely to think that they know the difference between the two types of fire.

The variable REGION4 (Pacific Coast) was positive and statistically significant in the estimated logistic equation for Q9. This implies that, relative to residents in the North, residents in the Pacific Coast are more likely to state that they know the difference between the two types of fire.

Employment Status. We used a binary variable UNEMPLOY for individuals who are unemployed. The variable UNEMPLOY was negative and statistically significant in the estimated logistic equation for Q9. This implies that unemployed individuals are less likely to think that they know the difference between the two types of fire.

Survey Time Frame. We included a binary variable NEWDATA to reflect the two time periods during which our survey was conducted to identify whether there is any variation in people's opinions about their own fire knowledge in those two survey time frames. The two surveys were conducted about a year apart. The value of NEWDATA is one for respondents in our second survey (which was conducted in the second time frame); hence the value of NEWDATA is zero for respondents in our first survey (which is the base).

The variable NEWDATA was negative and statistically significant in the estimated logistic equation for Q9. This implies that, relative to respondents in the first survey, respondents in the second survey are less likely to claim that they know the difference between the two types of fire.

Questions 10A-10E and 10aA-10aE

The remaining questions in the Knowledge Section were phrased as statements to which respondents answered true, false, or uncertain. A total of ten statements were read to respondents in two groups of five. Those claiming not to know the difference between wildfire and prescribed fire were read a short definition of each (Appendix A). General population responses are reported in Table K2 and K3. It should be noted, that in some cases, "correct responses" could be expected to vary depending on the individual's location. This ambiguity could contribute to the seemingly high percentage of "uncertain" responses. Nevertheless, the questions allow a general understanding of public knowledge/opinion about forest fire.

In general, more of the public believes that most wildfires are not natural occurrences (48 to 38 percent, Table K2). They also believe, by about a two to one margin, that wildfires are destructive to long-term forest or rangeland health and about 48 percent of the public feels wildfire is a leading environmental problem. The statements comparing prescribed and wildfire indicate that the largest portion of the public (45 to 38 percent) believe that both kinds of fire have basically the same effect, while only about a third of the public felt that prescribed fire killed most large trees in the burned area.

Table K2. For your state or region, please state whether you think the following statements are true, false, or you are uncertain? (Census weighted, n=6979)

	True	False	Uncertain/ Refused
	(Percent)		
Most wildfires occur naturally.	38.19	48.01	13.82
Wildfires are destructive to long-term forest or rangeland health.	56.11	29.37	14.51
Wildfire is a leading environmental problem.	47.87	35.50	16.63
Prescribed fires and wildfires have similar effects.	44.51	37.75	17.75
Prescribed fires kill most large trees in the burned area.	32.51	45.90	21.59

Table K3. For your state or region, please state whether you think the following statements are true, false, or you are uncertain? (Census weighted, n=6979)

	True	False	Uncertain/ Refused
	(Percent)		
Prescribed fires reduce the risk of wildfire.	73.64	10.62	15.74
Prescribed fires regularly get out of control.	26.60	57.56	15.85
Fire increases chances of insect outbreaks and plant disease.	26.18	46.15	27.67
Many plants require fire as part of their life cycle.	50.42	29.93	19.66
Fire is useful to control undesirable weeds and plants.	62.43	23.70	13.88

Table K3 reports the results of five more questions aimed at assessing public knowledge about prescribed fire and basic fire ecology. Seventy-four percent of the public correctly thinks that prescribed fire leads to a reduction of risk from wildfire, while only 11 percent think this statement is false. Only 27 percent of the public felt that prescribed fires regularly get out of control, while 58 percent believed they did not. Twenty-six percent of the public believes that fire increases the chances of insect and plant disease outbreaks, while 46 percent believe otherwise and 28 percent are uncertain. About 50 percent of the public believes that fire is a necessary part of the life cycle for many plants and almost two-thirds of the respondents felt that fire is useful to control undesirable weeds and plants. Across all statements in Tables K2 and K3, uncertain responses ranged from 14 percent (most wildfires occur naturally; fire is useful to control undesirable plants) to over 20 percent (fire increases chances for insect and plant disease outbreaks; prescribed fires kill most large trees in the burned area).

Cross-tabs for the socioeconomic and spatial variables among the responses in Tables K2 and K3 are presented in Appendix C, Tables 13-23. Again, it is important to note that the cross-tabs are somewhat naive and do not account for underlying correlations in the data. Formal testing for differences is done in the regression analysis in the next segment of the report. In general, the patterns are like those in the Experience Section. Higher income and higher educated people appear to demonstrate different knowledge levels and opinions about fire and its effects. However, among the three age groups, there appeared to be no discernable pattern. There were a few fairly large differences in responses by gender. The most profound differences between genders can be found in two statements, i.e., that "wildfire is a leading environmental problem" and "wildfires are destructive to long-term forest or rangeland health." In each of these statements females responded, "true" on average about 15 percent more times than males. Racial differences were more pronounced among some questions as well. For example, while there were only minor differences in the percentages of "true" responses among the three racial groups for the following two statements: "most wildfires occur naturally" and "prescribed fires and wildfires have similar effects." However, much larger differences, close to 20 percent, emerged for the following two statements: "prescribed fires reduce the risk of wildfire" and "prescribed fires kill most large trees in the burned area."

Finally, among the two spatial variables, population density and region, the results differed somewhat from those in the Experience Section. Among most of the experience measures, residents from the Rocky Mountain and Pacific regions generally provided responses indicating they were more likely to come in contact with forest fire or had some experience with the effects of fire. The same was true for respondents in the rural vs. near urban vs. urban population density categories. However, among the knowledge and opinion responses indicators of knowledge were somewhat mixed.

Multinomial logistic equations (see Appendix E for a description of this kind of model) were estimated for each of the ten statements in Tables K2 and K3 above. Details on the estimated equations can be found in Appendix D, Tables 14-23. For each of the equations, the response variable Y takes on values 0, 1 and 2, and we used the most appropriate answer in the base. If the appropriate answer is “True”, then Y = 1 when the response is “False”, and Y = 2 when the response is “Uncertain”. If the appropriate answer is “False”, then Y = 1 when the response is “True”, and Y = 2 when the response is “Uncertain”. If the appropriate answer is “Uncertain”, then Y = 1 when the response is “True”, and Y = 2 when the response is “False”. The probability associated with a particular response can be computed using information from the estimated equations in Appendix D. (A complete spreadsheet tool useful for calculating response probabilities is available from the authors).

The main focus of this section of our report is examining how demographic variables contribute to the different levels of fire knowledge. This is important and policy-relevant because the information we obtain from this analysis is essential for the efficient development of fire education and outreach programs for the general public.

Our questions were designed in such a way that there need not be best answer to each of the questions. The answers may vary depending upon the respondents’ geographical locations and their own opinions about wildfire and prescribed fire, e.g. the answer may be true, false or uncertain. Some of these questions, however, have unambiguous answers regardless of the respondents’ locations. For examples, the answer to Q10D is false because wildfires and prescribed fires do not have similar effects. Q10F is true because prescribed fire does reduce the risk of wildfire. Q10G is false, as prescribed fires rarely get out of control. Q10J is true as fire is useful to control undesirable weeds and plants, regardless of location.

We used the respondents’ score on questions Q10D, Q10F, Q10G and Q10J as a proxy for fire knowledge, since these four questions have definite answers. A person who answered one of these questions correctly gets a score of 1, a person who answered two of these questions correctly gets a score of 2, and so on. The lowest score a person can get is 0, and the highest score is 4. Subsequently, the level of fire knowledge increases as the score gets higher. A score of 0 would indicate not knowledgeable about fire, and a score of 4 would indicate very knowledgeable about fire. Accordingly, the response variable Y (proxy for fire knowledge) takes on positive integers ranging from 0 to 4. The explanatory variables used in the regression models include demographic variables like age, gender, race/ethnicity, education, income, immigration status, population density, regions, employment status, and other characteristics variables. An ordered logistic equation was estimated for this model, and details on the estimated equation can be found in Appendix D, Table 23A. Note that we must be very careful in interpreting the coefficients. The signs of the coefficients have ambiguous effects on the middle cells, which means that the signs of the coefficients have unambiguous effects only on the first cell (Prob.[Y=0]) and the last cell (Prob.[Y=4]) . It should also be noted that this model had a relatively low rate of correct predictions at 37 percent.

The probability of scoring 4 (very knowledgeable about fire) for an urban, 42 year-old, US-born, employed, Black female in our first survey, who has 16 years of education, who earns $40,100 a year, who lives in the South, who thinks that she can tell the difference between the two types of fire, and who was given questions referring to her own state or region would be 0.15. The probability for a White female with the same characteristics is 0.27; and for a Hispanic female, 0.18. For a Black male with the same characteristics, the probability is 0.19, for a White male, 0.33; and for a Hispanic male, 0.23.

Comparing across regions, consider an urban, 35 year-old, US-born, employed, White male in our first survey, who has 16 years of education, who earns $40,100 a year, who lives in the North, who thinks that he can tell the difference between the two types of fire, and who was given questions referring to his own state or region, the probability of scoring 4 (very knowledgeable about fire) is 0.28. Holding other variables constant, the probability rises to 0.33 for a person who lives in the South, 0.35 for a person who lives in the Rocky Mountains and the Great Plains, and 0.36 for a person who lives in the Pacific Coast.

For an urban, 35 year-old, foreign-born, employed, White male in our first survey, who has 16 years of education, who earns $40,100 a year, who lives in the Pacific Coast, who thinks that he can tell the difference between the two types of fire, and who was given questions referring to his own state or region, the probability of scoring 4 (very knowledgeable about fire) would be 0.25. Holding other variables constant, for an unemployed person, the probability decreases slightly to 0.23. For an urban, 35 year-old, foreign-born, employed, White male in our first survey, who has 16 years of education, who earns $40,100 a year, who lives in the Pacific Coast, who thinks that he can tell the difference between the two types of fire, and who was given questions referring to his own state or region, the probability of scoring 4 (very knowledgeable about fire) would be 0.25. Holding other variables constant, for an unemployed person, the probability decreases slightly to 0.23.

For an urban, 35 year-old, US-born, employed, White female in our first survey, who has 14 years of education, who earns $40,100 a year, who lives in the North, who thinks that she can tell the difference between the two types of fire, and who was given general questions without the statement “in your own state or region”, the probability of scoring 4 (very knowledgeable about fire) would be 0.16. Holding other variables constant, the probability rises to 0.18 for a person who was given questions specifically referring to her own state of region. The roles of each explanatory variable in the model are discussed below.

Age. The estimated ordered logistic equation did not yield any statistically significant variations in fire knowledge among people of different years of age.

Gender. The variable female was negative and statistically significant in the estimated equation for knowledge. This implies that, compared to males, females are likely to score lower, or females tend to have less knowledge of wildfire and prescribed fire.

Race/Ethnicity. Those classified as black were likely to score lower, or they tend be less knowledgeable about fire compared to those classified as white. The variable NONWH2 (black) was negative and statistically significant in the ordered logistic estimated equation, with white in the base (therefore excluded from equation). The coefficient on black is thus interpreted relative to the base. The variable NONWH3 (Hispanic) was negative and statistically significant in the estimated equation. This implies that, relative to those who are white, Hispanics are likely to score lower, and they tend to have less knowledge about wildfire and prescribed fire.

Education. As education increases fire knowledge increases**.** The variable EDUC_YR (measured by years of education received) was statistically significant with positive sign on the coefficient of the estimated ordered logistic equation. This unambiguously implies that people with more education tend to score higher, or more educated people tend to be more knowledgeable about fire.

Income. As income increases fire knowledge increases. The variable LNINC1 (natural log of income) was statistically significant with positive sign on the coefficient of the estimated ordered logistic equation. This unambiguously implies that people who receive higher income tend to score higher, or high-income people tend to be more knowledgeable about fire.

Immigration Status. The variable NONUS is a binary variable for respondents who were foreign-born (with US-born US citizen in the base). The coefficient on NONUS is thus interpreted relative to the base. The estimated logistic model coefficient on NONUS (immigrants) was negative and statistically significant meaning that immigrants are more likely to score lower, or immigrants tend to know less about wildfire and prescribed fire relative to the base.

Population Density. The variable NONRU2 is a binary variable for residents of urban areas, and the variable NONRU3 is a binary variable for residents of suburban areas, with residents of rural areas in the base. The coefficients on NONRU2 and NONRU3 are thus interpreted relative to the base. The variable NONRU2 (urban) was statistically insignificant in the estimated ordered logistic equation, implying that the estimated model did not yield any statistically significant variations in fire knowledge among rural and urban residents. The variable NONRU3 (suburban) was statistically insignificant in the estimated ordered logistic equation, implying that the estimated model did not yield any statistically significant variations in fire knowledge among rural and suburban residents.

Regions. Individuals in our survey are divided into four geographical regions based upon their respective FIP codes. We expect that different geographical locations would reflect different levels of fire experience among individuals. REGION1 (North) is the base and is therefore excluded from the equations). The coefficients on REGION2, REGION3 and REGION4 are thus interpreted relative to the base.

The variable REGION2 (South) was positive and statistically significant in the estimated ordered logistic equation. This implies that, relative to residents in the North, residents in the South are more likely to score higher, or they tend to be more knowledgeable about wildfire and prescribed fire. The variable REGION3 (Rocky Mountains and the Great Plains) was positive and statistically significant in the estimated ordered logistic equation. This implies that, relative to residents in the North, residents in the Rocky Mountains and the Great Plains are more likely to score higher, or they tend to be more knowledgeable about wildfire and prescribed fire. The variable REGION4 (Pacific Coast) was positive and statistically significant in the estimated ordered logistic equation. This implies that, relative to residents in the North, residents in the Pacific Coast are more likely to score higher, or they tend to be more knowledgeable about wildfire and prescribed fire. These results are consistent with the relative occurrence of forest fire geographically.

Employment Status. We used a binary variable UNEMPLOY for individuals who are unemployed. The variable UNEMPLOY was negative and statistically significant in the estimated ordered logistic equation. This implies that unemployed individuals are more likely to score lower, or they tend to be less knowledgeable about wildfire and prescribed fire.

Respondents' Own Opinions. We created a binary variable F9 based upon individuals' responses to the question on whether they think they know the difference between wildfire and prescribed fire (Q9). If the response to Q9 was "Yes", then F9 = 1 and zero otherwise. The underlying purpose is to verify if the respondents' own opinions about their own fire knowledge was true. The variable F9 was positive and statistically significant in the estimated ordered logistic equation. This implies that those who think they know the difference between wildfire and prescribed fire are more likely to score higher, or they tend to be more knowledgeable about fire. In other words, the responses to Q9 were true reflection of the individuals' own fire knowledge.

Locational Factor. We created a binary variable INTRO based upon whether the phrase "in my state/region" was included in each of the fire knowledge questions (Q10A – Q10aE) presented to the respondents. If the phrase was included as part of the question, then INTRO = 1, and zero otherwise. We believe that people tend to know more and better about the environmental issues in their own state or region. Thus individuals would tend to score higher, if the questions specifically referring to their own state or region. The variable INTRO was positive and statistically significant in the estimated ordered logistic equation. This implies that, relative to those who were given general forest fire questions, those who were given questions with respect to their own state or region tend to score higher. In other words, people tend to be more knowledgeable about wildfire and prescribed fire in their own state or region.

Survey Time Frame. We included a binary variable NEWDATA to reflect the two time periods during which our survey was conducted to identify whether there is any variation in people's fire knowledge in those two survey time frames. The two surveys were conducted about one year apart. The value of NEWDATA is one for respondents in our second survey (which was conducted in the second time frame); hence the value of NEWDATA is zero for respondents in our first survey (which is the base). The estimated ordered logistic equation did not yield any statistically significant variations in fire knowledge among individuals in the two survey time frames. There was no statistical evidence that individuals in one of surveys are relatively more (or less) knowledgeable about fire.

While our composite knowledge model is relatively crude, it tends to suggest that a number of socioeconomic and spatial factors are helpful in explaining the level of knowledge about fire found in the general public. In fact, they unambiguously indicate that fire knowledge varies by gender, ethnicity, education, income, immigration status, geographical regions and employment status. Additionally, we find that people tend to be more knowledgeable about forest fire issues in their own state or region, and their judgments about their own fire knowledge are likely to be true. We also find that the age of a person does not contribute to variations in fire knowledge, and relative to rural residents, urban and suburban residents are not necessarily less (or more) knowledgeable about fire. Finally, fire knowledge did not vary by the time of survey.

Attitudes, Opinions, Preferences

The final group of 16 questions in the fire module (Appendix A, 11A-E, 11aA-11aE, 12A-F) examines public attitudes and preferences pertaining to various fire management, post-fire recovery, personal risk, and government trust. These questions are obviously the most subjective and politically charged in this study. The first 5 statements and responses are reported in Table P1.

Table P1. For your state or region, please state whether you agree, disagree, or are uncertain about the following statements. (Census weighted, n=6979).

	Agree	Disagree	Uncertain/ Refused
	(Percent)		
An area burned by wildfire should be left to recover naturally.	54.67	29.03	16.30
Wildfires in remote areas should be allowed to burn if human life or property is not threatened.	35.94	51.31	12.75
All wildfires should be put out, regardless of location.	58.18	33.22	8.60
Where wildfire is common, homeowners should have to follow government guidelines to manage for wildfire risk	65.66	16.56	17.57
People who choose to live near forests or rangelands should be prepared to accept the risks of wildfire.	69.20	10.81	19.99

The first statement in Table P1, indicates that more than half of the general public thinks that areas once burned by wildfire should be left to recover naturally. The second and third statements examine the public's opinion about allowing nature to take its course via wildfire. Thirty-six percent of the public thinks that wildfires in remote areas should be allowed to burn if property or human life is unthreatened, while just over 51 percent disagree. Corroborating the previous response, 33 percent disagree with the statement that "all wildfires should be put out, regardless of location," with 58 percent disagreeing. Together responses to these three statements suggest that while a majority of the public is agreeable to nature taking its course in post-fire recovery, only about a third of the public is comfortable with allowing wildfire to naturally occur, and only then in remote places where property and human life are unthreatened.

The last two statements in Table P1 are among the most telling in the study. These statements pertain to the public's attitude toward homeowner behavior in fire prone areas. About 70 percent of the public believes that people who live in and around forests and rangelands should be prepared to accept the inherent risks of fire in such areas. Only 10 percent disagreed with this statement, while 20 percent were undecided. The other statement in Table P1 indicates that 66 percent of the public should have to follow government guidelines to manage fire risk. While the level of uncertainty is slightly lower than for the previous statement, the result appears to indicate a general confidence by the majority of the public that government, in an unspecified way, can be trusted to develop acceptable guidelines for homeowners to follow in order to manage wildfire risk.

Cross-tabs by spatial and socioeconomic variables for statements in Table P1 are reported in Appendix C, Tables 24-28. It appears that males are more likely to agree with allowing fires to burn naturally and for natural recovery than females. Similarly blacks appear to have a greater aversion than whites to allowing fires to proceed naturally. Hispanic responses were somewhere in between. Education also appears related to influence attitudes about allowing wildfires to burn and recover naturally, with more highly educated individuals be more likely to accept naturally occurring fire. Across all three "natural" statements, there appears to be little relationship to whether the individual is living in rural, near urban, or urban setting. However, it appears that differences exist across regions regarding the natural occurrence of fire. The Rocky Mountain and Pacific regions seemed less likely than North or South to agree that "an area burned by wildfire should be left to recover naturally." But, they were more likely to agree with letting wildfires burn naturally when property or human life was unthreatened.

A most interesting result presents itself when examining the cross-tabs for the final two statements in Table P1. Here there is virtually no difference across the gamut of spatial and socioeconomic variables related to responses for either statement. This suggests that the public is pretty consistent in their beliefs about assuming personal responsibility for living in a fire prone area, and that the public is also consistent in believing that residents of such areas should follow relevant government guidelines for managing fire risk.

Multinomial logistic equations were estimated for each of the 5 statements in Table P1. The first statement is, "An area burned by wildfire should be left to recover naturally." (Appendix A, 11A) The response variable Y takes on the values 0, 1 and 2. The response "Disagree" was chosen as the base category for comparisons, meaning the response variable Y = 0 if the response is "Disagree"; Y = 1 if the response is "Agree"; and Y = 2 if the response is "Uncertain". The explanatory variables used in the regression model include demographic variables like age, gender, race/ethnicity, education, income, immigration status, population density, regions, employment status, and survey time frame. We modeled rural, US-born, employed, white males in our first survey, who live in the North as the benchmark or baseline group. The model correctly predicted 57 percent of the responses. Details of the estimated equation can be found in Appendix D, Table 24.

Age. An additional year of age increases the log-odds between uncertain and disagree by 0.007. This implies that older people tend to be uncertain whether an area burned by wildfire should be left alone to recover naturally. The variable age is insignificant in the agree category.

Gender. The log-odds between agree and disagree is lower for females, implying that females are less likely to agree with the statement Q11A. However, the log-odds between uncertain and disagree is higher for females. This implies that females are more likely to be uncertain whether an area burned by wildfire should be left alone to recover naturally.

Race/Ethnicity. Those classified as White were chosen as the base. The coefficients on NONWH2 (black) and NONWH3 (Hispanic) are thus interpreted relative to the base. The log-odds between agree and disagree is lower for NONWH2 (black), implying that those classified as Black are less likely to agree with the statement Q11A. The log-odds between uncertain and disagree is also lower for Blacks, implying that those classified as black are less likely to be uncertain about the statement Q11A. Thus those classified as black are more likely to disagree that an area burned by wildfire should be left alone to recover naturally. The log-odds between agree and disagree is lower for NONWH3 (Hispanic), implying that those classified as Hispanic are less likely to agree with the statement Q11A. The log-odds between uncertain and disagree is also lower for Hispanics, implying that those classified as Hispanic are less likely to be uncertain about the statement Q11A. Thus those classified as Hispanic are more likely to disagree that an area burned by wildfire should be left alone to recover naturally.

Education. Another year of education increases the log-odds between agree and disagree by 0.09. This implies that people with more education tend to agree with the statement Q11A. Another year of education also increases the log-odds between uncertain and disagree by 0.04. This implies that people with more education also tend to be uncertain about the statement Q11A. Thus people with more education are less likely to disagree that an area burned by wildfire should be left alone to recover naturally.

Income. The log-odds between agree and disagree is lower as the percentage of income (LNINC1) rises. This implies that people with higher earnings are less likely to agree that an area burned by wildfire should be left alone to recover naturally. The variable LNINC1 (natural log of income) is insignificant in the uncertain category.

Immigration Status. The variable NONUS is a binary variable for respondents who were foreign-born (with US-born US citizen in the base). The coefficient on NONUS is thus interpreted relative to the base. The log-odds between agree and disagree is higher for NONUS (immigrants), implying that immigrants tend to agree with the statement Q11A. The log-odds between uncertain and disagree is also higher for immigrants, implying that immigrants tend to be uncertain about the statement Q11a. Thus immigrants are less likely to disagree that an area burned by wildfire should be left alone to recover naturally.

Population Density. The variable NONRU2 is a binary variable for residents of urban areas, and the variable NONRU3 is a binary variable for residents of suburban areas, with residents of rural areas in the base. The coefficients on NONRU2 and NONRU3 are thus interpreted relative to the base. Both binary variables NONRU2 (urban) and NONRU3 (suburban) are insignificant in the "agree" and "uncertain" categories. Hence, any differences among rural, near urban, and urban populations with respect to supporting natural regeneration after wildfire are minimal.

Regions. Individuals in our survey are divided into four geographical regions based upon their respective FIP codes. REGION1 (North) is the base and is therefore excluded from the equations). The coefficients on REGION2, REGION3 and REGION4 are thus interpreted relative to the base. The variable REGION2 (South) is insignificant in the "agree" and "uncertain" categories. The variable REGION3 (the Rocky Mountains and the Great Plains) is also insignificant in both categories. The log-odds between agree and disagree is lower for people living in REGION4 (the Pacific Coast). This implies that people living on the Pacific Coast tend to disagree relative to the other regions that an area burned by wildfire should be left alone to recover naturally. The variable REGION4 is insignificant in the uncertain category.

Employment Status. The log-odds between agree and disagree is higher for unemployed people. This implies that unemployed people tend to agree that an area burned by wildfire should be left alone to recover naturally. The variable UNEMPLOY is insignificant in the uncertain category.

Survey Time Frame. We included a binary variable NEWDATA to reflect the two time periods during which our survey was conducted to identify whether there is any variation in opinions among respondents in those two survey time frames. The two surveys were conducted about one year apart. The log-odds between agree and disagree is higher for people in our second survey, implying that people in the second survey tend to agree more with the statement Q11A. The log-odds between uncertain and disagree is also higher for people in our second survey, implying that people in the second survey tend to be uncertain with the statement Q11A. Thus, people in our second survey are less likely to disagree that an area burned by wildfire should be left alone to recover naturally. The difference however is relatively small at 3 percent.

A multinomial logistic equation was estimated for the second statement in Table P1, "Wildfires in remote areas should be allowed to burn if human life or property is not threatened." (Appendix A, Q11B). The model correctly predicted 53 percent of the responses. Details of the estimated equation can be found in Appendix D, Table 25.

Age. An additional year of age increases the log-odds between agree and disagree by 0.01 implying that older people tend to agree with the statement Q11B. An additional year of age also increases the log-odds between uncertain and disagree by 0.02, implying that older people tend to be uncertain about the statement Q11B. Thus older people are less likely to disagree that wildfires in remote areas should be allowed to burn if human life or property is not threatened.

Gender. The log-odds between agree and disagree is lower for females, implying that females are less likely to agree with the statement Q11B. However, the log-odds between uncertain and disagree is higher for females. This implies that females are more likely to be uncertain whether wildfires in remote areas should be allowed to burn if human life or property is not threatened.

Race/Ethnicity. Those classified as white were chosen as the base. The coefficients on NONWH2 (black) and NONWH3 (Hispanic) are thus interpreted relative to the base. The log-odds between agree and disagree is lower for NONWH2 (black), implying that those classified as black are less likely to agree with the statement Q11B. The log-odds between uncertain and disagree is also lower for blacks, implying that those classified as black are less likely to be uncertain about the statement Q11B. Thus those classified as black are more likely to disagree that wildfires in remote areas should be allowed to burn if human life or property is not threatened. The variable NONWH3 (Hispanic) is insignificant in the "agree" and "uncertain" categories.

Education. Another year of education increases the log-odds between agree and disagree by 0.09. This implies that people with more education tend to agree with the statement Q11B. Thus people with more education are more likely to agree that wildfires in remote areas should be allowed to burn if human life or property is not threatened. The variable EDUC_YR (years of education) is insignificant in the uncertain category.

Income. The variable LNINC1 (natural log of income) is insignificant for the “agree” and “uncertain” categories.

Immigration Status. The variable NONUS is a binary variable for respondents who were foreign-born (with US-born US citizen in the base). The coefficient on NONUS is thus interpreted relative to the base. The variable NONUS is insignificant in the “agree” and “uncertain” categories.

Population Density. The variable NONRU2 is a binary variable for residents of urban areas, and the variable NONRU3 is a binary variable for residents of suburban areas, with residents of rural areas in the base. The coefficients on NONRU2 and NONRU3 are thus interpreted relative to the base. Both binary variables NONRU2 (urban) and NONRU3 (suburban) are insignificant in the “agree” and “uncertain” categories.

Regions. Individuals in our survey are divided into four geographical regions based upon their respective FIP codes. REGION1 (North) is the base and is therefore excluded from the equations). The coefficients on REGION2, REGION3 and REGION4 are thus interpreted relative to the base. The log-odds between agree and disagree is lower for people living in REGION2 (South), implying that people in the South are less likely to agree that wildfires in remote areas should be allowed to burn if human life or property is not threatened. The variable REGION2 is insignificant in the uncertain category.

The log-odds between agree and disagree is higher for people living is REGION3 (Rocky Mountains and the Great Plains), implying that people in this region are more likely to agree with the statement Q11B. The log-odds between uncertain and disagree is also higher for people living in REGION3, implying that people in this region tend to be uncertain about the statement Q11B. Thus, people who live in the Rocky Mountains and the Great Plains are less likely to disagree that wildfires in remote areas should be allowed to burn if human life or property is not threatened. The log-odds between agree and disagree is higher for people living in REGION4 (the Pacific Coast). This implies that people living in the Pacific Coast are more likely to agree that an area burned by wildfire should be left alone to recover naturally. The variable REGION4 is insignificant in the uncertain category.

Employment Status. The variable UNEMPLOY is insignificant in the "agree" and "uncertain" categories.

Survey Time Frame. We included a binary variable NEWDATA to reflect the two time periods during which our survey was conducted to identify whether there is any variation in opinions among respondents in those two survey time frames. The two surveys were conducted about one year apart. The log-odds between agree and disagree is higher for people in our second survey, implying that people in the second survey tend to agree that wildfires in remote areas should be allowed to burn if human life or property is not threatened. The variable NEWDATA is insignificant in the uncertain category.

A multinomial logistic equation was estimated for the third statement in Table P3, "All wildfires should be put out, regardless of location." (Q11C). The model correctly predicted 61 percent of the responses. Details of the estimated equation can be found in Appendix D, Table 26.

Age. An additional year of age reduces the log-odds between agree and disagree by 0.01. This implies that older people tend to disagree that all wildfires should be put out, regardless of location. The variable age is insignificant in the uncertain category.

Gender. The log-odds between agree and disagree is higher for females, implying that females are more likely to agree with the statement Q11C. The log-odds between uncertain and disagree is also higher for females, implying that females are more likely to be uncertain about the statement Q11C. Thus females are less likely to disagree that all wildfires should be put out, regardless of location.

Race/Ethnicity. Those classified as white were chosen as the base. The coefficients on NONWH2 (black) and NONWH3 (Hispanic) are thus interpreted relative to the base.
The log-odds between agree and disagree is higher for NONWH2 (black), implying that those classified as black are more likely to agree that all wildfires should be put out, regardless of location. The variable NONWH2 is insignificant in the uncertain category.
The log-odds between agree and disagree is higher for NONWH3 (Hispanic), implying that those classified as Hispanic are more likely to agree that all wildfires should be put out, regardless of location. The variable NONWH3 is insignificant in the uncertain category.

Education. Another year of education reduces the log-odds between agree and disagree by -0.24. This implies that people with more education tend to disagree with the statement Q11C. Another year of education also reduces the log-odds between uncertain and disagree by -0.09. Thus people with more education are more likely to disagree that all wildfires should be put out, regardless of location.

Income. The log-odds between agree and disagree is lower as the percentage of income (LNINC1) rises. This implies that people with higher earnings are less likely to agree that all wildfires should be extinguished, regardless of location The variable LNINC1 (natural log of income) is insignificant in the uncertain category.

Immigration Status. The variable NONUS is a binary variable for respondents who were foreign-born (with US-born US citizen in the base). The coefficient on NONUS is thus interpreted relative to the base. The log-odds between agree and disagree is lower for NONUS (immigrants), implying that immigrants tend to disagree that all wildfires should be put out, regardless of location. The variable NONUS is insignificant in the uncertain category.

Population Density. The variable NONRU2 is a binary variable for residents of urban areas, and the variable NONRU3 is a binary variable for residents of suburban areas, with residents of rural areas in the base. The coefficients on NONRU2 and NONRU3 are thus interpreted relative to the base. Both binary variables NONRU2 (urban) and NONRU3 (suburban) are insignificant in the “agree” and “uncertain” categories.

Regions. Individuals in our survey are divided into four geographical regions based upon their respective FIP codes. REGION1 (North) is the base and is therefore excluded from the equations). The coefficients on REGION2, REGION3 and REGION4 are thus interpreted relative to the base. The log-odds between agree and disagree is higher for people who live in REGION2 (South), implying that people in the South tend to agree that all wildfires should be put out, regardless of location. The variable REGION2 is insignificant in the uncertain category.

The log-odds between agree and disagree is lower for people who live in REGION3 (the Rocky Mountains and the Great Plains), implying that people in this region tend to disagree that all wildfires should be put out, regardless of location. The variable REGION3 is insignificant in the uncertain category. The log-odds between agree and disagree is lower for people living in REGION4 (the Pacific Coast), implying that people in this region tend to disagree with the statement relative to residents in the North region.

The log-odds between uncertain and disagree is also lower for people living in the Pacific Coast, implying that people in this region are less likely to be uncertain about the statement Q11C. Thus people living in the Pacific Coast tend to disagree that all wildfires should be put out, regardless of location.

Employment Status. The binary variable UNEMPLOY (unemployed) is insignificant in the “agree” and “uncertain” categories.

Survey Time Frame. We included a binary variable NEWDATA to reflect the two time periods during which our survey was conducted to identify whether there is any variation in opinions among respondents in those two survey time frames. The two surveys were conducted about one year apart. The log-odds between agree and disagree is lower for people in our second survey, implying that people in the second survey tend to disagree that all wildfires should be put out, regardless of location. The variable NEWDATA is insignificant in the uncertain category.

A multinomial logistic equation was estimated for the fourth statement in Table P1, "Where wildfire is common, homeowners should have to follow government guidelines to manage for wildfire risk." (Q11D). The model correctly predicted 71 percent of the responses. Details of the estimated equation can be found in Appendix D, Table 27.

Age. Additional years of age increases the log-odds between agree and disagree by 0.02. This implies that older people tend to agree that where wildfire is common, homeowners should have to follow government guidelines to manage for wildfire risk. An additional year of age also increases the log-odds between uncertain and disagree by 0.009. This implies that older people tend to be uncertain about the same statement (Q11D). Hence, older people are less likely to disagree with the statement Q11D.

Gender. The variable female is insignificant in the agree category. The log-odds between uncertain and disagree is higher for females, implying that females also tend to be uncertain about Q11D.

Race/Ethnicity. Those classified as white were chosen as the base. The coefficients on NONWH2 (black) and NONWH3 (Hispanic) are thus interpreted relative to the base. The log-odds between agree and disagree is lower for NONWH2 (black), implying that those classified as black are less likely to agree with the statement Q11D.

The log-odds between uncertain and disagree is also lower for blacks, implying that those classified as black are less likely to be uncertain about Q11D. Thus black people tend to disagree to a greater extent than white people that where wildfire is common, homeowners should have to follow government guidelines to manage for wildfire risk.

The log-odds between agree and disagree is lower for NONWH3 (Hispanic), implying that those classified as Hispanic are less likely to agree with the statement Q11D.
The log-odds between uncertain and disagree is also lower for Hispanics, implying that those classified as Hispanic are less likely to be uncertain about Q11D. Thus Hispanic people also tend to disagree that where wildfire is common, homeowners should have to follow government guidelines to manage for wildfire risk.

Education. An additional year of education increases the log-odds between agree and disagree by 0.08. This implies that people with more education tend to agree with the statement Q11D. The variable EDUC_YR (years of education) is insignificant in the uncertain category.

Income. The log-odds between agree and disagree is higher as the percentage of income (LNINC1) increases, implying that people with higher earnings tend to agree with Q11D. The variable LNINC1 is insignificant in the uncertain category.

Immigration Status. The variable NONUS is a binary variable for respondents who were foreign-born (with US-born US citizen in the base). The coefficient on NONUS is thus interpreted relative to the base.

The variable NONUS is insignificant in the agree category. The log-odds between uncertain and disagree is higher for immigrants, implying that immigrants tend to be uncertain about Q11D.

Population Density. The variable NONRU2 is a binary variable for residents of urban areas, and the variable NONRU3 is a binary variable for residents of suburban areas, with residents of rural areas in the base. The coefficients on NONRU2 and NONRU3 are thus interpreted relative to the base. The log-odds between agree and disagree is lower for NONRU2 (urban) residents, implying that urban residents tend to disagree more often than rural people that where wildfire is common, homeowners should have to follow government guidelines to manage for wildfire risk. This is interesting given that rural people are more likely at risk from fire. The variable NONRU2 is insignificant in the uncertain category. The binary variable NONRU3 (suburban) is insignificant in the "agree" and "uncertain" categories.

Regions. Individuals in our survey are divided into four geographical regions based upon their respective FIP codes. REGION1 (North) is the base and is therefore excluded from the equations). The coefficients on REGION2, REGION3 and REGION4 are thus interpreted relative to the base. The variables REGION2 (South) and REGION4 (Pacific Coast) are insignificant in the "agree" and "uncertain" categories. The log-odds between agree and disagree is higher for people in REGION3 (the Rocky Mountains and the Great Plains), implying that people who live in this region tend to agree that where wildfire is common, homeowners should have to follow government guidelines to manage for wildfire risk. The variable REGION3 is insignificant in the uncertain category.

Employment Status. The variable UNEMPLOY (unemployed) is insignificant in the "agree" and "uncertain" categories implying employment status does not help to explain this opinion.

Survey Time Frame. We included a binary variable NEWDATA to reflect the two time periods during which our survey was conducted to identify whether there is any variation in opinions among respondents in those two survey time frames. The two surveys were conducted about one year apart. The variable NEWDATA is insignificant in the agree category. The log-odds between uncertain and disagree is higher for people in our second survey, implying that this group of people tend to be uncertain about Q11D.

Fire knowledge. We used the respondents' score on questions Q10D, Q10F, Q10G and Q10J in our survey as a proxy for fire knowledge. A person who answered one of these questions correctly gets a score of 1, a person who answered two of these questions correctly gets a score of 2, and so on. Subsequently, the level of fire knowledge increases as the score gets higher. The variable for fire knowledge is SCORE4. The log-odds between agree and disagree is higher as fire knowledge increases, implying that people who have more fire knowledge tend to agree with the statement Q11D. The log-odds between uncertain and disagree is lower as fire knowledge increases, implying that people with more fire knowledge are less likely to be uncertain about the statement Q11D. The effects of the coefficient on the responses can be observed by comparing the fitted probabilities.

A multinomial logistic equation was estimated for the final statement in Table P1, "People who choose to live near forests or rangelands should be willing to accept the risks of wildfire." (Q11E). The model correctly predicted 74 percent of the responses. Details of the estimated equation can be found in Appendix D Table 28.

Age. The variable age is insignificant in the "agree" and "uncertain" categories.

Gender. The variable female is insignificant in the agree category. The log-odds between uncertain and disagree is higher for females, implying that females are more likely to be uncertain about the statement Q11E.

Race/Ethnicity. Those classified as white were chosen as the base. The coefficients on NONWH2 (black) and NONWH3 (Hispanic) are thus interpreted relative to the base.
The log-odds between agree and disagree is lower for NONWH2 (black), implying that those classified as black are less likely to agree with the statement Q11E. The log-odds between uncertain and disagree is also lower for blacks, implying that those classified as black are less likely to be uncertain about the statement Q11E. Thus those classified as black are more likely to disagree than whites that people who choose to live near forests or rangelands should be willing to accept the risks of wildfire.

The log-odds between agree and disagree is lower for NONWH3 (Hispanic), implying that those classified as Hispanic are less likely to agree with the statement Q11E. The log-odds between uncertain and disagree is also lower for Hispanics, implying that those classified as Hispanic are less likely to be uncertain about the statement Q11E. Thus those classified as Hispanic are more likely to disagree than whites that people who choose to live near forests or rangelands should be willing to accept the risks of wildfire.

Education. Another year of education increases the log-odds between agree and disagree by 0.09. This implies that people with more education tend to agree with the statement Q11E. Another year of education reduces the log-odds between uncertain and disagree by -0.07. This implies that people with more education are less likely to be uncertain about the statement Q11E. The effects of the coefficient on the responses can be observed by comparing the fitted probabilities.

Income. The variable LNINC1 (natural log of income) is insignificant in the "agree" and "uncertain" categories.

Immigration Status. The variable NONUS is a binary variable for respondents who were foreign-born (with US-born US citizen in the base). The coefficient on NONUS is thus interpreted relative to the base. The variable NONUS is insignificant in the agree and disagree categories.

Population Density. The variable NONRU2 is a binary variable for residents of urban areas, and the variable NONRU3 is a binary variable for residents of suburban areas, with residents of rural areas in the base. The coefficients on NONRU2 and NONRU3 are thus interpreted relative to the base. Both binary variables NONRU2 (urban) and NONRU3 (suburban) are insignificant in the "agree" and "uncertain" categories.

Regions. Individuals in our survey are divided into four geographical regions based upon their respective FIP codes. REGION1 (North) is the base and is therefore excluded from the equations). The coefficients on REGION2, REGION3 and REGION4 are thus interpreted relative to the base. The variables REGION2 (South) and REGION4 (Pacific Coast) are insignificant in the "agree" and "uncertain" categories. The log-odds between agree and disagree is higher for people living in REGION3 (the Rocky Mountains and the Great Plains). This implies that people living in this region tend to agree that people who choose to live near forests or rangelands should be willing to accept the risks of wildfire. The variable REGION3 is insignificant in the uncertain category.

Employment Status. The log-odds between agree and disagree is lower for unemployed people. This implies that unemployed people tend to disagree that people who choose to live near forests or rangelands should be willing to accept the risks of wildfire. The log-odds between uncertain and disagree is also lower for unemployed people. Thus the unemployed tend to disagree with Q11E.

Survey Time Frame. We included a binary variable NEWDATA to reflect the two time periods during which our survey was conducted to identify whether there is any variation in opinions among respondents in those two survey time frames. The two surveys were conducted about a year apart. The log-odds between agree and disagree is higher for people in our second survey, implying that people in the second survey tend to agree with the statement Q11E. The log-odds between uncertain and disagree is also higher for people in our second survey, implying that people in the second survey tend to be uncertain with the statement Q11E. Thus people in our second survey are less likely to disagree than people in the first survey that people who choose to live near forests or rangelands should be willing to accept the risks of wildfire.

Questions 11aA-11aE

The next group of statements, Table P2, examines toward fire management practices by public land managers (Appendix A, 11aA-aE). Three statements deal with specific types of ground cover or vegetation control, one statement deals with post-fire salvage, and another statement assesses the public's trust in land manager and fire professionals' fire management decisions.

While there is a relatively large amount of uncertainty associated with the first three responses in Table P2, a number of obvious conclusions emerge. First, the public seems to be in favor of land managers' use of mechanical thinning (58 percent agree), and they overwhelmingly support the use of prescribed fire (91 percent agree) as wildfire mitigation methods. These results are even more telling when considering the percentages that disagree with the use of mechanical thinning (12 percent) and prescribed fire (less than 4 percent). However, the public seems far less inclined to accept the use of chemical treatments as part of a wildfire management program with only 30 percent agreeing and nearly 50 percent disagreeing outright. Next, over 80 percent of the public favors the salvage and sale of timber damaged by fire on public lands. This result somewhat confounds the result in the previous section wherein over 50 percent of the public felt that areas burned by wildfire should be left to recover naturally. Finally, by a ratio of almost five to one, the general public appears to feel that public land managers and fire professionals can be trusted to make the right decisions for dealing with wildfire problems.

Table P2. For your state or region, please state whether you agree, disagree, or are uncertain about the following statements. (Census weighted, n=6979).

	Agree	Disagree	Uncertain/ Refused
	(Percent)		
Public land managers should use mechanical vegetation removal as part of a wildfire management program.	57.61	12.02	30.37
Public land managers should use chemical treatments to control ground vegetation as part of a wildfire management program.	30.14	47.44	22.42
Public land managers and forest professionals can be trusted to select the best methods for dealing with wildfire.	68.24	14.70	17.06
It makes sense to salvage and sell timber damaged by wildfire on public lands.	80.68	7.66	11.66
Public land managers should use prescribed fire as part of a wildfire management program	90.90	5.30	3.80

Cross-tabs for the statements and results represented in Table P2 are reported in Appendix C, Tables 29-33. With the exception of chemical treatments, the relative patterns for socioeconomic and spatial variables across the management practices are similar. Males and more educated individuals tend to support management practices like mechanical thinning, prescribed burning, and post-burn timber salvage somewhat more than their categorical counterparts. Differences within age, region, and population density classes are not large. About 93 percent of whites, 84 percent of blacks, and 88 percent of Hispanics, support the use of prescribed fire as a wildfire management technique. These numbers are indicative of the wide acceptance of prescribed burning across races in the nation. It is interesting to note that for the "trust" statement, differences within all of the socioeconomic categories are very minor. Only a relatively small regional difference appears where the South and North seem to have a higher propensity to trust decisions of public land managers and forest professionals than do respondents from the Pacific and Rocky Mountain regions.

Multinomial logistic regressions were estimated for each of the 5 statements in Table P2. The response variable Y takes on the values 0, 1 and 2. The response "Disagree" was chosen as the base category for comparisons, meaning the response variable Y = 0 if the response is "Disagree"; Y = 1 if the response is "Agree"; and Y = 2 if the response is "Uncertain". The explanatory variables used in the regression model include demographic variables like age, gender, race/ethnicity, education, income, immigration status, population density, regions, employment status, survey time frame, and fire knowledge. We modeled rural, US-born, employed, White males in our first survey, who live in the North as the benchmark group. The first model addressed the statement, "Public land managers should use mechanical ground vegetation removal as part of a wildfire management program in my state/region." (Q11aA). The model correctly predicted 59 percent of the responses. Details of the estimated equation can be found in Appendix D, Table 29.

Age. An additional year of age increases the log-odds between agree and disagree by 0.01. This implies that older people tend to agree with the statement Q11aA. An additional year of age also increases the log-odds between uncertain and disagree by 0.007. This implies that older people tend to be uncertain about the statement Q11aA. Thus older people are less likely to disagree with the statement that public land managers should use mechanical ground vegetation removal as part of a wildfire management program in their state/region.

Gender. The variable FEMALE is insignificant in the agree category. The log-odds between uncertain and disagree is higher for females, implying that females tend to be uncertain if public land managers should use mechanical ground vegetation removal as part of a wildfire management program in their state/region.

Race/Ethnicity. Those classified as White were chosen as the base. The coefficients on NONWH2 (black) and NONWH3 (Hispanic) are thus interpreted relative to the base. The variable NONWH2 (black) is insignificant in the agree category. The log-odds between uncertain and disagree is also lower for blacks, implying that those classified as black are less likely to be uncertain if public land managers should use mechanical ground vegetation removal as part of a wildfire management program in their state/region. The variable NONWH3 is insignificant in the “agree” and “uncertain” categories.

Education. An additional year of education reduces the log-odds between agree and disagree by -0.04. This implies that people with more education tend to disagree with the statement Q11aA. The variable EDUC_YR (years of education) is insignificant in the uncertain categories.

Income. The variable LNINC1 (natural log of income) is insignificant in the “agree” and “uncertain” categories.

Immigration Status. The variable NONUS is a binary variable for respondents who were foreign-born (with US-born US citizen in the base). The coefficient on NONUS is thus interpreted relative to the base. The variable NONUS is insignificant in the “agree” and “uncertain” categories.

Population Density. The variable NONRU2 is a binary variable for residents of urban areas, and the variable NONRU3 is a binary variable for residents of suburban areas, with residents of rural areas in the base. The coefficients on NONRU2 and NONRU3 are thus interpreted relative to the base. Both binary variables NONRU2 (urban) and NONRU3 (suburban) are insignificant in the “agree” and “uncertain” categories.

Regions. Individuals in our survey are divided into four geographical regions based upon their respective FIP codes. REGION1 (North) is the base and is therefore excluded from the equations). The coefficients on REGION2, REGION3 and REGION4 are thus interpreted relative to the base. The log-odds between agree and disagree is higher for people who live in REGION2 (South), implying that people living in the South tend to agree that public land managers should use mechanical ground vegetation removal as part of a wildfire management program in their state/region. The variable REGION2 (South) is insignificant in the uncertain category.

The variable REGION3 (the Rocky Mountains and the Great Plains) is insignificant in the agree category. The log-odds between uncertain and disagree is lower for people in this region, implying that people living in the Rocky Mountains and the Great Plains are less likely to be uncertain if public land managers should use mechanical ground vegetation removal as part of a wildfire management program in their state/region.

The log-odds between agree and disagree is higher for people living in REGION4 (Pacific Coast), implying that people in this region are more likely to agree that public land managers should use mechanical ground vegetation removal as part of a wildfire management program in their state/region. The variable REGION4 (Pacific Coast) is insignificant in the uncertain category.

Employment Status. The variable UNEMPLOY (unemployed) is insignificant in the "agree" and "uncertain" categories.

Survey Time Frame. We included a binary variable NEWDATA to reflect the two time periods during which our survey was conducted to identify whether there is any variation in opinions among respondents in those two survey time frames. The two surveys were conducted about one year apart. The log-odds between agree and disagree is higher for people in the second survey, implying that this group of people tend to agree with the statement Q11aA. The log-odds between uncertain and disagree is also higher for people in our second survey, implying that this group of people tend to be uncertain about Q11aA. Thus people in our second survey are less likely to disagree with the statement that public land managers should use mechanical ground vegetation removal as part of a wildfire management program in their state/region.

A multinomial logistic equation was estimated for second statement in Table P2, "Public land managers should use chemical treatments to control ground vegetation as part of a wildfire management program in my state/region." (Q11aB). The model correctly predicted 50 percent of the responses. Details of the estimated equation can be found in Appendix D, Table 30.

Age. An additional year of age increases the log-odds between agree and disagree by 0.01. This implies that older people tend to agree with the statement Q11aB. An additional year of age also increases the log-odds between uncertain and disagree by 0.006. This implies that older people tend to be uncertain about the statement Q11aB. Thus older people are less likely to disagree with the statement that public land managers should use chemical treatments to control ground vegetation as part of a wildfire management program in their own state/region.

Gender. The log-odds between agree and disagree is lower for females, implying that females tend to disagree with the statement Q11aB. The log-odds between uncertain and disagree is higher for females, implying that females also tend to be uncertain if public land managers should use chemical treatments to control ground vegetation as part of a wildfire management program in their own state/region.

Race/Ethnicity. Those classified as white were chosen as the base. The coefficients on NONWH2 (black) and NONWH3 (Hispanic) are thus interpreted relative to the base.
The variable NONWH2 (black) is insignificant in the agree category. The log-odds between uncertain and disagree is lower for blacks, implying that those classified as black are less likely to be uncertain if public land managers should use chemical treatments to control ground vegetation as part of a wildfire management program in their own state/region.

The log-odds between agree and disagree is higher for NONWH3 (Hispanic), implying that those classified as Hispanic tend more likely to agree with the statement Q11aB than to whites. The log-odds between uncertain and disagree is also higher for NONWH3 (Hispanic), implying that those classified as Hispanic tend to be uncertain with the statement Q11aB. Thus, those classified as Hispanic are less likely than whites to disagree that public land managers should use chemical treatments to control ground vegetation as part of a wildfire management program in their own state/region.

Education. An additional year of education reduces the log-odds between agree and disagree by -0.09. This implies that people with more education tend to disagree with the statement Q11aB. An additional year of education also reduces the log-odds between uncertain and disagree by -0.07. Thus people with more education tend to disagree that public land managers should use chemical treatments to control ground vegetation as part of a wildfire management program in their own state/region.

Income. The variable LNINC1 (natural log of income) is insignificant in the "agree" and "uncertain" categories.

Immigration Status. The variable NONUS is a binary variable for respondents who were foreign-born (with US-born US citizen in the base). The coefficient on NONUS is thus interpreted relative to the base. The variable NONUS is insignificant in the agree category. The log-odds between uncertain and disagree is higher for immigrants, implying that immigrants tend to be uncertain if public land managers should use chemical treatments to control ground vegetation as part of a wildfire management program in their own state/region.

Population Density. The variable NONRU2 is a binary variable for residents of urban areas, and the variable NONRU3 is a binary variable for residents of suburban areas, with residents of rural areas in the base. The coefficients on NONRU2 and NONRU3 are thus interpreted relative to the base. The log-odds between agree and disagree is lower for NONRU2 (urban) residents, implying that urban residents tend to disagree that public land managers should use chemical treatments to control ground vegetation as part of a wildfire management program in their own state/region. The variable NONRU2 is insignificant in the uncertain category. The binary variable NONRU3 (suburban) is insignificant in the "agree" and "uncertain" categories.

Regions. Individuals in our survey are divided into four geographical regions based upon their respective FIP codes. REGION1 (North) is the base and is therefore excluded from the equations). The coefficients on REGION2, REGION3 and REGION4 are thus interpreted relative to the base. The log-odds between agree and disagree is higher for people who live in REGION2 (South), implying that people living in the South tend to agree with the statement Q11aB more than those in the North. The log-odds between uncertain and disagree is also higher for people living in the South, implying that people in this region are more likely to be uncertain about Q11aB. Thus people in the South are less likely to disagree that public land managers should use chemical treatments to control ground vegetation as part of a wildfire management program in their own state/region than people from the North.

The log-odds between agree and disagree is higher for people in REGION3 (the Rocky Mountains and the Great Plains), implying that people living in this region are more likely to agree that public land managers should use chemical treatments to control ground vegetation as part of a wildfire management program in their own state/region.
The variable REGION3 (the Rocky Mountains and the Great Plains) is insignificant in the uncertain category. The variable REGION4 (Pacific Coast) is insignificant in the "agree" and "uncertain" categories.

Employment Status. The variable UNEMPLOY (unemployed) is insignificant in the "agree" and "uncertain" categories.

Survey Time Frame. We included a binary variable NEWDATA to reflect the two time periods during which our survey was conducted to identify whether there is any variation in opinions among respondents in those two survey time frames. The two surveys were conducted about one year apart. The variable NEWDATA is insignificant in the agree category. The log-odds between uncertain and disagree is higher for people in our second survey, implying that this group of people tend to be uncertain if public land managers should use chemical treatments to control ground vegetation as part of a wildfire management program in their own state/region.

Fire knowledge. We used the respondents' score on questions Q10D, Q10F, Q10G and Q10J in our survey as a proxy for fire knowledge. A person who answered one of these questions correctly gets a score of 1, a person who answered two of these questions correctly gets a score of 2, and so on. Subsequently, the level of fire knowledge increases as the score gets higher. The variable for fire knowledge is SCORE4.

The log-odds between agree and disagree is lower as fire knowledge increases, implying that people who have more fire knowledge tend to disagree with the statement Q11aB. The log-odds between uncertain and disagree is also lower as fire knowledge increases, implying that people with more fire knowledge are less likely to be uncertain about the statement Q11aB. Thus people who are more knowledgeable about fire tend to disagree that public land managers should use chemical treatments to control ground vegetation as part of a wildfire management program in their own state/region.

A multinomial logistic equation was estimated for the third statement in Table P2, "Public land managers and forest professionals can be trusted to select the most appropriate methods for dealing with wildfire." (Q11aC). The model correctly predicted 68 percent of the responses. Details of the estimated equation can be found in Appendix D, Table 31.

Age. The variable age is insignificant in the agree category. An additional year of age also increases the log-odds between uncertain and disagree by 0.009. This implies that older people tend to be uncertain if public land managers and forest professionals can be trusted to select the most appropriate methods for dealing with wildfire.

Gender. The log-odds between agree and disagree is higher for females, implying that females tend to agree with the statement Q11aC. The log-odds between uncertain and disagree is also higher for females, implying that females also tend to be uncertain about Q11aC. Thus females are less likely to disagree that with the statement that public land managers and forest professionals can be trusted to select the most appropriate methods for dealing with wildfire.

Race/Ethnicity. Those classified as White were chosen as the base. The coefficients on NONWH2 (black) and NONWH3 (Hispanic) are thus interpreted relative to the base.
The log-odds between agree and disagree is lower for NONWH2 (black), implying that those classified as black are less likely to agree with the statement Q11aC. The log-odds between uncertain and disagree is also lower for blacks, implying that those classified as black are less likely to be uncertain about Q11aC. Thus black people tend to disagree more than whites that public land managers and forest professionals can be trusted to select the most appropriate methods for dealing with wildfire. For example, the probabilities of agreeing with the statement for white vs. black females, living in the South, aged 35, with 14 years education, making $40,000 annually are 70- and 60 percent, respectively. The variable NONWH3 (Hispanic) is insignificant in the "agree" and "uncertain" categories.

Education. An additional year of education reduces the log-odds between agree and disagree by -0.04. This implies that people with more education tend to disagree with the statement Q11aC. The variable EDUC_YR (years of education) is insignificant in the uncertain category.

Income. The log-odds between agree and disagree is lower as the percentage of income (LNINC1) increases, implying that people with higher earnings tend to disagree with Q11aC. The log-odds between uncertain and disagree is also lower as the percentage of income (LNINC1) increases. Thus people with higher earnings are more likely to disagree that public land managers and forest professionals can be trusted to select the most appropriate methods for dealing with wildfire. However, the difference is only 2 percent between someone making $85,000 vs. $40,000 per year.

Immigration Status. The variable NONUS is a binary variable for respondents who were foreign-born (with US-born US citizen in the base). The coefficient on NONUS is thus interpreted relative to the base. The variable NONUS is insignificant in the agree category. The log-odds between uncertain and disagree is higher for immigrants, implying that immigrants tend to be uncertain if public land managers and forest professionals can be trusted to select the most appropriate methods for dealing with wildfire.

Population Density. The variable NONRU2 is a binary variable for residents of urban areas, and the variable NONRU3 is a binary variable for residents of suburban areas, with residents of rural areas in the base. The coefficients on NONRU2 and NONRU3 are thus interpreted relative to the base. The log-odds between agree and disagree is higher for NONRU2 (urban) residents, implying that urban residents tend to agree that public land managers and forest professionals can be trusted to select the most appropriate methods for dealing with wildfire. The variable NONRU2 is insignificant in the uncertain category. The log-odds between agree and disagree is higher for NONRU3 (suburban) residents, implying that suburban residents are more likely to agree that public land managers and forest professionals can be trusted to select the most appropriate methods for dealing with wildfire. The binary variable NONRU3 (suburban) is insignificant in the uncertain category.

Regions. Individuals in our survey are divided into four geographical regions based upon their respective FIP codes. REGION1 (North) is the base and is therefore excluded from the equations). The coefficients on REGION2, REGION3 and REGION4 are thus interpreted relative to the base. The log-odds between agree and disagree is higher for people who live in REGION2 (South), implying that people living in the South tend to agree that public land managers and forest professionals can be trusted to select the most appropriate methods for dealing with wildfire. The variable REGION2 is insignificant in the uncertain category. The variable REGION3 (the Rocky Mountains and the Great Plains) is insignificant in the “agree” and “uncertain” categories.

The log-odds between agree and disagree is lower for people in REGION4 (Pacific Coast), implying that people in this region tend to disagree that public land managers and forest professionals can be trusted to select the most appropriate methods for dealing with wildfire. The variable REGION4 (Pacific Coast) is insignificant in the uncertain category.

Employment Status. The log-odds between agree and disagree is higher for people who are unemployed, implying that unemployed people tend to agree that public land managers and forest professionals can be trusted to select the most appropriate methods for dealing with wildfire. The variable UNEMPLOY (unemployed) is insignificant in the uncertain category.

Survey Time Frame. We included a binary variable NEWDATA to reflect the two time periods during which our survey was conducted to identify whether there is any variation in opinions among respondents in those two survey time frames. The two surveys were conducted about one year apart. The log-odds between agree and disagree is higher for people in our second survey, implying that this group of people are more likely to agree that public land managers and forest professionals can be trusted to select the most appropriate methods for dealing with wildfire. However the practical difference is minimal.

The log-odds between uncertain and disagree is also higher for people in our second survey, implying that this group of people tend to be uncertain if public land managers and forest professionals can be trusted to select the most appropriate methods for dealing with wildfire.

Fire knowledge. We used the respondents' score on questions Q10D, Q10F, Q10G and Q10J in our survey as a proxy for fire knowledge. A person who answered one of these questions correctly gets a score of 1, a person who answered two of these questions correctly gets a score of 2, and so on. Subsequently, the level of fire knowledge increases as the score gets higher. The variable for fire knowledge is SCORE4.

The log-odds between agree and disagree is higher as fire knowledge increases, implying that people who have more fire knowledge tend to agree with the statement Q11aC. The log-odds between uncertain and disagree is lower as fire knowledge increases, implying that people with more fire knowledge are less likely to be uncertain about the statement Q11aC. The effects of the coefficient on the responses can be observed by comparing the fitted probabilities.

A multinomial logistic equation was estimated for fourth statement in Table P2, "It makes sense to salvage and sell timber damaged by wildfire on public lands." (Q11aD). The model correctly predicted 82 percent of the responses. Details of the estimated equation can be found in Appendix D, Table 32.

Age. The variable age is insignificant in the "agree" and "uncertain" categories.

Gender. The log-odds between agree and disagree is higher for females, implying that females tend to agree with the statement Q11aD more than males. The log-odds between uncertain and disagree is also higher for females, implying that females tend to be uncertain about the statement Q11aD. This implies that females are less likely than males to disagree that it makes sense to salvage and sell timber damaged by wildfire on public lands.

Race/Ethnicity. Those classified as white were chosen as the base. The coefficients on NONWH2 (black) and NONWH3 (Hispanic) are thus interpreted relative to the base.

The log-odds between agree and disagree is lower for NONWH2 (black), implying that those classified as black are less likely to agree that it makes sense to salvage and sell timber damaged by wildfire on public lands. The variable NONWH2 is insignificant in the uncertain category. The variable NONWH3 (Hispanic) is insignificant in the "agree" and "uncertain" categories.

Education. Another year of education reduces the log-odds between agree and disagree by -0.06. This implies that people with more education tend to disagree with the statement Q11aD. Another year of education also reduces the log-odds between uncertain and disagree by -0.17. Thus people with more education are more likely to disagree that it makes sense to salvage and sell timber damaged by wildfire on public lands.

Income. The log-odds between agree and disagree is higher the percentage of income increases (LNINC1). This implies that people with higher earnings are more likely to agree that if it makes sense to salvage and sell timber damaged by wildfire on public lands. The variable LNINC1 (natural log of income) is insignificant in the uncertain category.

Immigration Status. The variable NONUS is a binary variable for respondents who were foreign-born (with US-born US citizen in the base). The coefficient on NONUS is thus interpreted relative to the base. The variable NONUS is insignificant in the agree category. The log-odds between uncertain and disagree is higher for immigrants, implying that immigrants tend to be uncertain about the statement Q11aD. Thus immigrants are more likely to be uncertain if it makes sense to salvage and sell timber damaged by wildfire on public lands.

Population Density. The variable NONRU2 is a binary variable for residents of urban areas, and the variable NONRU3 is a binary variable for residents of suburban areas, with residents of rural areas in the base. The coefficients on NONRU2 and NONRU3 are thus interpreted relative to the base.

The log-odds between agree and disagree is higher for NONRU2 (urban) residents, implying that urban residents tend to agree that it makes sense to salvage and sell timber damaged by wildfire on public lands. The variable NONRU2 is insignificant in the uncertain category. The variable NONRU3 (suburban) is insignificant in the “agree” and “uncertain” categories.

Regions. Individuals in our survey are divided into four geographical regions based upon their respective FIP codes. REGION1 (North) is the base and is therefore excluded from the equations). The coefficients on REGION2, REGION3 and REGION4 are thus interpreted relative to the base.

The variables REGION2 (South) and REGION4 (Pacific Coast) are insignificant in the “agree” and “uncertain” categories. The log-odds between agree and disagree is lower for people in REGION3 (the Rocky Mountains and the Great Plains), implying that people in this region tend to disagree with the statement Q11aD. The log-odds between uncertain and disagree is also lower for people in REGION3. Thus people in this region are more likely to disagree with the statement that it makes sense to salvage and sell timber damaged by wildfire on public lands. Nevertheless, the difference between the probabilities that a typical white male respondent from the North agrees vs. a Rocky Mountain region male with the same characteristics is only 85 percent vs. 84percent. A relatively small practical difference albeit statistically significant.

Employment Status. The variable UNEMPLOY (unemployed) is insignificant in the "agree" and "uncertain" categories.

Survey Time Frame. We included a binary variable NEWDATA to reflect the two time periods during which our survey was conducted to identify whether there is any variation in opinions among respondents in those two survey time frames. The two surveys were conducted about one year apart. The log-odds between agree and disagree is higher for people in our second survey, implying that people in the second survey tend to agree with the statement Q11aD. The log-odds between uncertain and disagree is also higher for people in our second survey, implying that people in the second survey tend to be uncertain with the statement Q11aD. Thus people in our second survey are less likely to disagree that it makes sense to salvage and sell timber damaged by wildfire on public lands.

The final statement in Table P2 was, "Public land managers should use prescribed fire as part of a wildfire management program." (Q11aE). A multinomial logistic equation was estimated for Q11aE. The model correctly predicted 93 percent of the responses. Details of the estimated equation can be found in Appendix D, Table 33.

Age. The variable age is insignificant in the "agree" and "uncertain" categories.

Gender. The log-odds between agree and disagree is lower for females, implying that females are less likely to agree with the statement that public land managers should use prescribed fire as part of a wildfire management program in their own state/region. The variable FEMALE is insignificant in the uncertain category.

Race/Ethnicity. Those classified as white were chosen as the base. The coefficients on NONWH2 (black) and NONWH3 (Hispanic) are thus interpreted relative to the base.
The log-odds between agree and disagree is lower for NONWH2 (black), implying that those classified as black are less likely to agree with the statement Q11aE. The log-odds between uncertain and disagree is also lower for blacks, implying that those classified as black are less likely to be uncertain about the statement Q11aE. Thus those classified as black are more likely to disagree with the statement that public land managers should use prescribed fire as part of a wildfire management program in their state/region.

The log-odds between agree and disagree is lower for NONWH3 (Hispanic), implying that those classified as Hispanic are less likely to agree with the statement Q11aE. The variable NONWH3 is insignificant in the uncertain category.

Education. The variable EDUC_YR (years of education) is insignificant in the "agree" and "uncertain" categories.

Income. The variable LNINC1 (natural log of income) is insignificant in the "agree" and "uncertain" categories.

Immigration Status. The variable NONUS is a binary variable for respondents who were foreign-born (with US-born US citizen in the base). The coefficient on NONUS is thus interpreted relative to the base. The variable NONUS is insignificant in the agree category. The log-odds between uncertain and disagree is higher for NONUS (immigrants), implying that immigrants are more likely to be uncertain whether public land managers should use prescribed fire as part of a wildfire management program in their state/region.

Population Density. The variable NONRU2 is a binary variable for residents of urban areas, and the variable NONRU3 is a binary variable for residents of suburban areas, with residents of rural areas in the base. The coefficients on NONRU2 and NONRU3 are thus interpreted relative to the base. Both binary variables NONRU2 (urban) and NONRU3 (suburban) are insignificant in the "agree" and "uncertain" categories.

Regions. Individuals in our survey are divided into four geographical regions based upon their respective FIP codes. REGION1 (North) is the base and is therefore excluded from the equations). The coefficients on REGION2, REGION3 and REGION4 are thus interpreted relative to the base.

The variable REGION2 (South) is insignificant in the agree category. The log-odds between uncertain and disagree is lower for people who live in the South, implying that people living in the South are less likely to be uncertain if public land managers should use prescribed fire as part of a wildfire management program in their state/region.

The variable REGION3 (the Rocky Mountains and the Great Plains) is insignificant in the agree category. The log-odds between uncertain and disagree is lower for people in this region, implying that people living in the Rocky Mountains and the Great Plains are less likely to be uncertain if public land managers should use prescribed fire as part of a wildfire management program in their state/region. The variable REGION4 (Pacific Coast) is insignificant in the "agree" and "uncertain" categories.

Employment Status. The variable UNEMPLOY is insignificant in the "agree" and "uncertain" categories.

Survey Time Frame. We included a binary variable NEWDATA to reflect the two time periods during which our survey was conducted to identify whether there is any variation in opinions among respondents in those two survey time frames. The two surveys were conducted about one year apart. The variable NEWDATA is insignificant in the agree category. The log-odds between uncertain and disagree is higher for people in our second survey, implying that people in the second survey tend to be uncertain if public land managers should use prescribed fire as part of a wildfire management program in their state/region.

Questions 12A-F

The final group of statements in this section elicits respondent concerns across a range of issues related to visual, ecological, and management topics. The statements and responses are reported in Table P3. The table makes it clear that the public is most concerned (64 percent) about long-term forest health and that it be considered in developing fire management programs. Also related to forest health, 52 percent of the public appears to be concerned about potential harm to fish and wildlife from prescribed fire. Among the topics listed, the public is least concerned about public land managers' ability to deal with forest fire, however, 54 percent were concerned that taxpayer's costs be considered. Only 40 percent of the public was concerned about smoke from prescribed fire, while 42 percent were not concerned at all. A slightly higher proportion of the public was concerned about scenic quality and recreation opportunity loss (42 percent), while 34 percent were not concerned about this issue.

Cross-tabs for the statements and results represented in Table P3 are reported in Appendix C, Tables 34-39. A number of these results are worth noting. With the exception of the statement about long-term forest health, concern about the stated issues appears inversely correlated with education and income. There also appear to be only minor differences across region and population density. The latter is somewhat surprising in that one might expect rural dwellers to be more directly affected by smoke from prescribed fire. Gender was not an issue with long-term forest health, taxpayer cost, or fire management ability of land managers. However, women demonstrated more concern about smoke from prescribed fire, harm to wildlife, and reduced scenic quality. The most pronounced differences in concern were encountered in the race category. Across all statements blacks expressed higher levels of concern than either whites (lowest) or Hispanics.

Table P3. For your state or region, please state whether you are concerned, slightly concerned, or not concerned about the following: (Census weighted, n=6979

	Concerned	Slightly concerned	Not concerned	Don't know/ Refused
	(Percent)			
Smoke from prescribed fire.	39.92	14.91	42.32	2.86
Public land managers' ability to manage for fire in forests and rangeland.	38.20	20.19	32.94	8.67
Harm to fish and wildlife from prescribed fire.	52.31	16.64	25.95	5.10
Reduced scenic quality and recreation opportunities from prescribed fire.	42.15	16.84	33.93	7.07
Taxpayer's cost will be considered when developing fire management programs	53.61	17.28	23.44	5.67
Long-term forest health will be considered when developing fire management programs	64.22	13.62	16.38	5.77

Ordered logistic equations were estimated for each of the six statements in Table P3 (Appendix A, 12A-F). These questions led the respondents to reveal their own opinions, and hence their answers were indications of how concerned they were about specified prescribed fire issues. The respondents' answers to these six questions also reflect, to a certain extent, the level of trust and confidence they have in forest fire professionals and the government with respect to fire environmental issues. Our findings are therefore important and relevant for effective and efficient implementations of both current and future forest fire management programs. For each model, the response variable Y takes on values 0 for "Concerned", 1 for "Somewhat Concerned", and 2 for "Not Concerned". The explanatory variables used in the regression model include demographic variables like age, gender, race/ethnicity, education, income, immigration status, population density, regions, employment status, survey time frame, and fire knowledge. We modeled rural, US-born, employed, white males in our first survey, who live in the North as the benchmark group. Details on the estimated equations can be found in Appendix D, Tables 34-39.

We observe specific patterns for each of the explanatory variables in the estimated equations, which enable us to identify factors associated with people's opinion, trust and confidence in the existing prescribed fire programs and those responsible for their implementations. Note that we must be very careful in interpreting the coefficients. The signs of the coefficients have ambiguous effects on the middle cells, which means that the signs of the coefficients have unambiguous effects only on the first cell (Prob.[Y=0]) and the last cell (Prob.[Y=2]) . The roles of each explanatory variable are discussed below.

Age. The variable age was negative and statistically significant in all estimated ordered logistic equations except Q12C. This implies that as age increases people become more concerned about smoke from prescribed fire, more concerned about public land manager's ability to manage forest fire, and more concerned about reduced scenic quality and recreation opportunities due to prescribed fire. Additionally, as age increases people become more concerned about government not considering taxpayers' cost and long-term ecosystem health when developing fire management programs. The variable age was statistically insignificant in the estimated equation for Q12C.

Gender. The variable female was negative and statistically significant in the estimated ordered logistic equations for Q12A, Q12C and Q12D. This implies that females tend to be more concerned about smoke from prescribed fire, more concerned about harm to fish and wildlife from prescribed fire, and more concerned about reduced scenic quality and recreation opportunities due to prescribed fire. The variable female was statistically insignificant in the estimated equations for Q12B, Q12E and Q12F. These latter three issues all related to management or government activity.

Race/Ethnicity. Those classified as white were chosen as the base. The coefficients on NONWH2 (black) and NONWH3 (Hispanic) are thus interpreted relative to the base. The variable NONWH2 (black) was negative and statistically significant in all estimated equations.

This implies that, relative to those classified as white, black people tend to be more concerned about the forest fire issues stated in Q12A – Q12F.

The variable NONWH3 (Hispanic) was also negative and statistically significant in all estimated equations. This implies that, relative to those classified as white, those classified as Hispanic also tend to be more concerned about the forest fire issues stated in Q12A – Q12F.

These results suggest that ethnic minorities (blacks and Hispanics) are more concerned about the effects of prescribed fire than whites. The results also suggest that these same minorities tend to be more concerned about land managers' abilities to deal with fire management and the government's ability to consider taxpayer costs and long-term forest health in designing management programs.

Education. The variable EDUC_YR (years of education) was positive and statistically significant in the estimated logistic equations for Q12A – Q12E. This implies that people with more education tend to be less concerned about smoke from prescribed fire, less concerned about public land's manager ability to manage forest fire, less concerned about prescribed fire's harm to fish and wildlife, and less concerned about reduced scenic quality and recreation opportunities due to prescribed fire. As education increases, people also become less concerned about the costs government will incur when developing fire management programs. However, the education variable was negative and statistically significant in the estimated equation for Q12F. This means that as education increases, people tend to be more concerned about government not considering long-term ecosystem health when developing fire management programs.

Income. The variable LNINC1 (natural log of income) was positive and statistically significant in the estimated logistic equations for Q12A – Q12E. This implies that people with higher earnings tend to be less concerned about smoke from prescribed fire, less concerned about public land's manager ability to manage forest fire, less concerned about prescribed fire's harm to fish and wildlife, and less concerned about reduced scenic quality and recreation opportunities due to prescribed fire. As percentage of income increases, people also become less concerned about the costs government will incur when developing fire management programs. The variable LNINC1 (natural log of income) was insignificant in the estimated equation for Q12F.

Immigration Status. The variable NONUS is a binary variable for respondents who were foreign-born (with US-born US citizen in the base). The coefficient on NONUS is thus interpreted relative to the base. The variable NONUS was insignificant in all estimated ordered logistic equations. In other words, the estimated models for Q12A – Q12F did not yield any statistically significant variations in opinions and levels of trust between immigrants and US-born US citizens.

Population Density. The variable NONRU2 is a binary variable for residents of urban areas, and the variable NONRU3 is a binary variable for residents of suburban areas, with residents of rural areas in the base. The coefficients on NONRU2 and NONRU3 are thus interpreted relative to the base. The variable NONRU2 (urban) was negative and statistically significant in the estimated equation for Q12D, implying that, relative to rural residents, urban residents tend to be more concerned about reduced scenic quality and recreation opportunities from prescribed fire. The variable NONRU2 was insignificant in the estimated ordered logistic equations for Q12A, Q12B, Q12C, Q12E and Q12F.

The variable NONRU3 (suburban) was negative and statistically significant in the estimated equation for Q12D, implying that, relative to rural residents, suburban residents tend to be more concerned about reduced scenic quality and recreation opportunities from prescribed fire. The variable NONRU3 was insignificant in the estimated ordered logistic equations for Q12A, Q12B, Q12C, Q12E and Q12F.

Regions. Individuals in our survey are divided into four geographical regions based upon their respective FIP codes. We expect that different geographical locations would reflect different opinions among individuals. REGION1 (North) is the base and is therefore excluded from the equations. The coefficients on REGION2, REGION3 and REGION4 are thus interpreted relative to the base.

The variable REGION 2 (South) was negative and statistically significant in the estimated ordered logistic equations for Q12A and Q12F. This implies that, relative to people living in the North, people who live in the South tend to be more concerned about smoke from prescribed fire, and they tend to be more concerned about government not considering long-term ecosystem health when developing fire management programs. The variable was insignificant in the estimated equations for Q12C, Q12D and Q12E.

The variable REGION3 (the Rocky Mountains and the Great Plains) was negative and statistically significant in the estimated ordered logistic equation for Q12B. This implies that, relative to people living in the North, people who live in the Rocky Mountains and the Great Plains tend to be more concerned about public managers' ability to manage forest fire. However, the variable REGION3 was positive and statistically significant in the estimated equations for Q12C and Q12D. This implies that, relative to people in the North, people who live in this region are less concerned about harm to fish and wildlife, and reduced scenic quality and recreation opportunities from prescribed fire. The variable was insignificant in the estimated equations for Q12A, Q12E and Q12F.

The variable REGION4 (Pacific Coast) was negative and statistically significant in the estimated ordered logistic equations for Q12B and Q12F. This implies that, relative to people living in the North, people who live in the Pacific Coast are more concerned about public land managers' ability to manage forest fire. Additionally, people in the Pacific Coast are more concerned about government not considering long-term ecosystem health when developing fire management programs. The variable REGION4 was statistically insignificant in the estimated equations for Q12A, Q12C, Q12D and Q12E.

Employment Status. We used a binary variable UNEMPLOY for individuals who are unemployed. The variable UNEMPLOY was negative and statistically significant in the estimated ordered logistic equations for Q12A and Q12D. This implies that the unemployed are more concerned about smoke from prescribed fire, and more concerned about reduced scenic quality and recreation opportunities from prescribed fire. Additionally, the variable UNEMPLOY was positive and statistically significant in the estimated equation for Q12E. This implies that the unemployed are less concerned about the costs government will incur when developing fire management programs.

Survey Time Frame. We included a binary variable NEWDATA to reflect the two time periods during which our survey was conducted to identify whether there is any variation in people's opinions in those two survey time frames. The two surveys were conducted about one year apart. The value of NEWDATA is one for respondents in our second survey (which was conducted in the second time frame); hence the value of NEWDATA is zero for respondents in our first survey (which is the base).

The variable NEWDATA was positive and statistically significant in all estimated equations except Q12E. This implies that people in the second survey tend to be less concerned about smoke from prescribed fire, less concerned about public land managers' ability to manage forest fire, less concerned about prescribed fire's harm to fish and wildlife, and less concerned about reduced scenic quality and recreation opportunities due to prescribed fire. Moreover, people in the second survey are also less concerned about government not considering long-term ecosystem health when developing fire management programs. The variable NEWDATA was statistically insignificant in the estimated equation for Q12E.

Fire knowledge. We used the respondents' score on questions Q10D, Q10F, Q10G and Q10J in our survey as a proxy for fire knowledge. A person who answered one of these questions correctly gets a score of 1, a person who answered two of these questions correctly gets a score of 2, and so on. Subsequently, the level of fire knowledge increases as the score gets higher. The variable for fire knowledge is SCORE4.

The variable SCORE4 was positive and statistically significant in all six estimated ordered logistic equations. This implies that people with more fire knowledge tend to be less concerned about the prescribed fire issues stated from Q12A through Q12F; they have more confidence in public land managers and government, and they are less likely to be bothered by the side effects of prescribed fire.

Results II – Market Segmentation Analysis

In this section of the report we employ various market segmentation routines in an effort to determine market segments that could be specifically targeted by education and outreach efforts designed to enhance public understanding and support for science-based fire management. While the results are somewhat ambiguous depending on the clustering procedure selected, the result below basically corroborate the regression results in the previous section.

Knowledge

The k-means nonhierarchical clustering approach is used to identify segments in our sample. The k-means cluster analysis is a partitioning method that produces "*k*" different clusters that are of greatest possible distinction.

By identifying the segments, we are able to find out how these segments are different. In this study, an a-priori number of segments is determined. Since we wish to find out how and why people scored differently on four fire knowledge questions (Fire10D, F, G and J) presented to them, we set the number of segments to two so that we can determine two distinct groups - a high-score group and a low-score group.[1] Thus we are able to explore the profiles of members (observations) that belong to these two mutually exclusive groups.

Table MS1 below shows the frequency of the respondents' scores, ranging from zero to four. A large number of respondents obtained 2 or 3 points, while about 6 percent of the respondents did not get any questions right and 19 percent of them scored perfectly.

Table MS1. Frequency of Score (on Fire10D, F, G, and J)

Score	Frequency	Percent	Cum. %
0	442	6.33	6.33
1	878	12.58	18.91
2	1,768	25.33	44.25
3	2,550	36.54	80.79
4	1,341	19.21	100.00
Total	6,979	100.00	

The results of the k-means clustering approach are shown in table MS-2. The means for the high-score and low-score groups are reported. The total number of respondents is 6979.

Table MS2. One-Dimensional K-means Cluster Analysis
(Variable: Score)

	Cluster 1 (High-score)	Cluster 2 (Low-score)	Total
# of respondents	3891	3088	6979
Mean	3.3446	1.4294	2.4973
Standard Deviation	0.4753	0.7290	1.1252
Min. Score	3	0	0
Max. Score	4	2	4

Note: Different starting centers for the k-means iterative procedures produce different classifications of observations. We used STATA to conduct the clustering procedure and set the first *k* observations as the starting centers for the 2 groups. Several starting centers have also been used, but the above partitioning creates the desired distinct high-score and low-score groups which are useful for our analysis.

Apparently, the mean score of group 1 is higher than that of group 2. The mean score of group 2 is about 1 point below the average score of the overall sample, while the mean score of group1 is approximately 1 point higher. The information we obtain from this one-dimensional clustering process is limited. The central piece of information missing from the analysis is the profile of members that belong to these two clusters. In this case, a multi-dimensional analysis is necessary such that the distinct characteristics of the clusters can be identified.

In addition to score, we now include other variables such as age, years of education and income into consideration. The number of clusters is two and the results are displayed in table MS-3.

Table MS3. Multi-Dimensional K-means Cluster Analysis

	Frequency	Percent
1	5,173	78.38
2	1,427	21.62
Total	6,600	100.00

		Score	Age	Education	Income
1	Mean	2.4440	45.4763	14.0074	41876.17
	SD	1.1369	18.0598	2.1338	17063.01
	Min	0	16	8	2500
	Max	4	92	20	80880.41
2	Mean	2.7659	45.1058	15.8655	120215.7
	SD	1.0111	12.8612	2.1808	40980.38
	Min	0	16	8	81267.7
	Max	4	91	20	200000
Total	Mean	2.5136	45.3962	14.4091	58743.57
	SD	1.1187	17.0703	2.2762	40418.53
	Min	0	16	8	2500
	Max	4	92	20	200000

Note: The starting centers are the first *k* observations.

The mean score of the overall sample is 2.5. The k-means clustering produces two non-overlapped groups of individuals. Group 1 has well over 5000 members and their mean score is lower than that of group 2. Members in the two groups have an average age of 45. On average, members of group 2 have slightly more years of education than members of group 1 and the entire sample. Their earnings are also much higher compared to the others. Given that the minimum income of group 2 is larger that the maximum income of group 1, the income gap between groups 1 and 2 is present.

Since different clustering procedures or different starting centers produce different clustering outcomes, we perform a k-medians clustering with a different starting center to see how the outcomes might vary.

Table MS4. Multi-Dimensional K-medians Cluster Analysis

	Frequency	Percent
1	3,764	57.03
2	2,836	42.97
Total	6,600	100.00

		Score	Age	Education	Income
1	Mean	2.3706	45.8273	13.5452	33541.49
	SD	1.1582	19.3586	1.9631	12036.44
	Min	0	16	8	2500
	Max	4	92	20	58078.74
2	Mean	2.7035	44.8241	15.5557	92192.32
	SD	1.0341	13.4268	2.1539	40593.85
	Min	0	16	8	58264.92
	Max	4	91	20	200000
Total	Mean	2.5136	45.3962	14.4091	58743.57
	SD	1.1187	17.0703	2.2762	40418.53
	Min	0	16	8	2500
	Max	4	92	20	200000

Note: The starting centers are the last *k* observations.

The observations are once again divided into two groups. The difference between the total numbers of group members has shrunk with group 1 having less than 60 percent of total observations and group 2 slightly more than 40 percent. Group 1 has lower mean score compared to group 2 and the entire sample. The average age difference between the two groups is one year. The age of group 1 is more dispersed compared to that of group 2. On average, group 2 has received more education than the others. The income gap between the two groups is also evident. The average income of group 2 is higher than the others.

In a nutshell, we observe that those who have more education and higher earning tend to have more knowledge of fire. The age of an individual may or may not play a role. The points we drew from the above analyses are not final conclusions but are empirical questions that lead us to further explore our data using statistical methodologies.

We have so far conducted our analyses with continuous data. Given the binary nature of some of the demographic variables we have, we feel that binary clustering is needed.
Recall that in the one-dimensional k-means clustering procedure, the observations have already been partitioned into two score groups. Accordingly, we dichotomize observations in our data based upon their scores. In other words, we create a binary variable called HSCORE for observations assigned to cluster 1 in the procedure shown in table MS-2. This variable serves as a proxy for people's knowledge of wild and prescribed fires. In addition to HSCORE, we also include other binary variables to conduct binary k-means cluster analyses, and these variables are shown in table MS-5 below.

Table MS5. Binary Variables and Definitions

HSCORE = 1	for observations belong to the high-score group.
FEMALE =1	for female
WHITE = 1	for non-Hispanic white
UNEMPLY =1	for the unemployed
NONUS=1	for non-US citizen or foreign-born US citizen
F11AC=1*	for yes, public land managers and forest professionals can be trusted to select the most appropriate methods for dealing with wildfire.
F12E =1*	for individuals who are concerned or somewhat concerned that the government will not consider the costs to taxpayers when developing fire management programs.
F12F=1*	for individuals who are concerned or somewhat concerned that the government will not consider long-term ecosystem health when developing fire management programs.

* Abbreviations for survey questions FIRE11H, FIRE12E and FIRE12F respectively.

The binary variables in table MS-4 are self-explanatory. The variable F11H represents a proxy for people's confidence in public managers and forest professionals, and F12E and F12F are proxies for people's opinion on whether they think the government can be trusted when it comes to fire management.

The k-means clustering procedure is conducted based on two of the fifteen binary data similarity measures described in Gower (1985): the *matching* measure (Sokal and Michener 1958) and the *Jaccard* measure (Jaccard 1908).[2] We set the number of clusters equal to two. The results of these two clustering procedures are shown in tables MS-6 & MS-7.

Table MS-6 reports the mean of each binary variable in two non-overlapped clusters. The observations are unevenly partitioned with group 1 containing 83 percent of the respondents, and group 2 only 17 percent. All members in group 1 are white; only 2 percent of them are non-US citizens, 11 percent of them are unemployed, and well over half of the group have more knowledge of fire. The proportions of female members in groups 1 and 2 are almost equal. This means that gender does not play any distinct role in characterizing the groups.

TABLE MS6. Binary K-means Cluster Analysis (*Matching* Measure)

	Frequency	Percent
1	4,479	83.41
2	891	16.59
Total	5,370	100.00

	FEMALE	HSCORE	WHITE	UNEMPLY	NONUS	F11H	F12E	F12F
1	.5421	.6073	1	.1094	.0243	.8247	.7205	.8075
2	.5455	.4501	0	.3300	.1167	.7755	.7823	.8541
Total	.5426	.5812	.8341	.1460	.0397	.8166	.7307	.8153

* Note: The starting centers are the first *k* observations in our sample.

When it comes to the issue of confidence and trust, members of group 1 are more likely to have confidence in the professionals. Additionally, they are less likely to be concerned about the government's fire management programs. On the other hand, members of group 2 show both less confidence in the professionals and less trust in the government, and they tend to be less knowledgeable about fire.

TABLE MS7. Binary K-means Cluster Analysis (*Jaccard* Measure)

	Frequency	Percent
1	1,350	25.14
2	4,020	74.86
Total	5,370	100.00

	FEMALE	HSCORE	WHITE	UNEMPLY	NONUS	F11H	F12E	F12F
1	.5126	.7178	.8941	.2948	.0363	.8807	0	.5481
2	.5527	.5353	.8139	.0960	.0408	.7950	.9761	.9050
Total	.5426	.5812	.8341	.1460	.0397	.8166	.7307	.8153

* Note: The starting centers are random.

The results of the clustering procedure using the *Jaccard* measure does show some changes of the mean of each variable in the two clusters. Group 1 has 1350 members that constitute about 25 percent of the total number of observations. Group 2 is three times the size of group 1. The proportion of female members in each group is about the same. Group 1 members are more knowledgeable about fire compared to group 2 members. The mixing proportion of white members is different from that in the previous clustering in which the *matching* measure was used. For example, each group now has more than 80 percent of members being white. Nearly 30 percent of group 1 members are unemployed (includes retirees and students), and 4 percent of them are non-US citizens. Group 1 has shown relatively more confidence in forest professionals; they are considerably less concerned about the government's fire management program.

Though the results of these two clustering procedures are somewhat different, the analyses unequivocally implicate a specific pattern – respondents who are more knowledgeable about fire show more confidence in forest professionals and trust in the government. We also find that these respondents tend to have higher levels of education and earnings. [3] Besides partitioning and identifying distinct groups of observations, the clustering procedures cannot guarantee the robustness of these results. Therefore the cluster's profiles emerged from the outcomes of these procedures are subject to rigorous statistical testing.

Experience (fire1-5)

In this section, we use the K-means clustering approach to identify groups of people who have some (or no) experience with forest fires. Our objective here is to observe the relation between demographics and experience. We create binary variables for survey questions FIRE1 through FIRE5. Their definitions are shown in table MS-8.

Table MS8. Binary Variables for Experience and Their Definitions

F1=1*	for respondents who have seen, heard, or read about forest fires in the past 12 months.
F2=1*	for respondents who have witnessed a forest fire before.
F3=1*	for respondents who have seen a forest after a fire burned through it.
F4=1*	for respondents who have altered their recreation plans because of forest fire.
F5=1*	for respondents whose visibility has been affected by forest fire smoke while traveling.

* Abbreviations for survey questions FIRE1 through FIRE5.

Besides the binary variables listed above, we also include other binary demographic variables such as gender (FEMALE), race (WHITE), employment status (UNEMPLY) and citizenship (NONUS) for our clustering exercise. The definitions of these demographic variables remain the same as before. The number of clusters is set at 2. Using the *Jaccard* measure (Jaccard 1908), the results of the K-means clustering are shown in table MS-9.

TABLE MS9. Binary K-means Cluster Analysis (*Jaccard* Measure)

	Frequency	Percent
1	3,356	49.27
2	3,455	50.73
Total	6,811	100.00

	F1	F2	F3	F4	F5	FEMALE	WHITE	UNEMPLY	NONUS
1	.7798	.0113	.4026	.0200	.0375	.6821	.8248	.0799	.0438
2	.8535	.6894	.9204	.3198	.6654	.4440	.8394	.0185	.0452
Total	.8172	.3553	.6652	.1721	.3560	.5613	.8322	.0487	.0445

Note: The starting centers are the last *k* observations.

The 6811 observations are evenly partitioned into groups 1 and 2. Compared to group 1, more members of group 2 have seen, heard or read about forest fires around the time the survey was conducted. More than 60 percent of them have witnessed a forest fire before, compared to merely 1 percent of group 1. Over 90 percent of group 2 members have seen a forest after burn,

30 percent of them have changed their recreation plans due to forest fire, and nearly 70 percent of them whose visibility has been affected by forest fire smoke.
Clearly, group 1 has relatively less forest fire experience compared to group 2. Nearly 70 percent of group 1 members are female, while less than 45 percent of group 2 members are female. The proportions of white respondents and non-US citizens in each group are almost the same. More respondents in group 1 are unemployed.

Based on the results in table MS-9, we observe that females tend to have less forest fire experiences. Race and citizenship do not contribute to the differences of forest fire experience among individuals. However, the result does indicate that unemployed individuals are likely to have less forest fire experience. We ran this procedure several times using different starting centers to see how the results are changed. Table MS-10 displays the results of one of the re-runs.

TABLE MS10. Binary K-means Cluster Analysis (*Jaccard* Measure)

	Frequency	Percent
1	6,196	90.97
2	615	9.03
Total	6,811	100.00

	F1	F2	F3	F4	F5	FEMALE	WHITE	UNEMPLY	NONUS
1	.8299	.3882	.7048	.1843	.3869	.5387	.9147	.0168	.0324
2	.6894	.0244	.2667	.0488	.0455	.7886	0	.3707	.1659
Total	.8172	.3553	.6652	.1721	.3560	.5613	.8322	.0487	.0445

Note: The starting centers are the first *k* observations.

The observations are now unevenly divided. Group 1 consists of more than 6000 members or 91 percent of the observations, while group 2 has 615 members or 9 percent of the observations. The differences of the two groups are obvious. Group 1 has relatively more fire experience, and 54 percent of its members are female. On the other hand, group 2 has relatively less fire experience, and most of them are female. The results show the distinct differences of race, employment status and citizenship in these two groups. Most of the group 1 members are white, while none of the group 2 is white. While only 2 percent of group 1 are unemployed, nearly 40 percent of group 2 are unemployed. Additionally, 17 percent of group 2 are non-US citizens, compared to only 3 percent in group 1.

Clearly, the results are different from what we have found previously. Subsequently, we re-ran the procedure several times with a different number of clusters. The results of the K-means clustering procedure with three clusters are reported in table MS-11.

The observations are unevenly partitioned into three groups. Group 1 is the largest group that contains more than 4000 members. Group 3 has more than 2300 members and group 2, the smallest group, has more than 400 members. Group 2 has least fire experience compared to the others, and group 3 has slightly less fire experience compared to group 1. The majority of members in groups 2 and 3 are female, but less than half of the members in group 1 are female.

Most of the observations in groups 1 and 3 are white compared to group 2. None of the members in group 1 is unemployed, and only 3 percent of them are non-US citizens.

TABLE MS11. Binary K-means Cluster Analysis (*Jaccard* Measure)

	Frequency	Percent
1	4,069	59.74
2	416	6.11
3	2,326	34.15
Total	6,811	100.00

	F1	F2	F3	F4	F5	FEMALE	WHITE	UNEMPLY	NONUS
1	.8231	.3981	.7137	.1998	.4030	.4883	.9150	0	.0295
2	.7308	.0313	.2716	.0601	.0673	.8077	.0168	.0144	.2284
3	.8224	.3383	.6509	.1436	.3255	.6449	.8332	.1402	.0378
Total	.8172	.3553	.6652	.1721	.3560	.5613	.8322	.0487	.0445

Note: The starting centers are the first *k* observations.

All these procedures imply unambiguously that male individuals tend to have more fire experience. It is not clear whether employment status, citizenship and race are related to experience at this point, though we do observe a small group of observations who are considerably more ignorant about forest fire are non-white and non-US citizens. Therefore statistical testing is needed before any conclusions can be made.

Fire Preventive Measures (fire8a-8e)

In this section, we will examine the relations between fire preventive measures and binary demographics. During our telephone survey, we asked the respondents five questions related to steps they have taken to prevent fire. This allows us to identify risk averse individuals and their specific characteristics. The questions and their corresponding binary variables are displayed in table MS-12.

Table MS12. Binary Variables for Fire Preventive Measures and Their Definitions

F8A=1*	for respondents who keep leaves, shrubs, trees and vegetation cleared near building.
F8B=1*	for respondents who spray herbicides to control undergrowth.
F8C=1*	for respondents who purchase extra health insurance.
F8D=1*	for respondents who keep extra hoses and firefighting equipment around.
F8E=1*	for respondents who periodically burn undergrowth around their homes.

* Abbreviations for survey questions FIRE8A through FIRE8E.

Using the K-means clustering procedures, we partitioned our data into two non-overlapped groups. The results are shown in tables MS-13 through MS-15.

Tables MS-13 and MS-14 show the outcomes of the K-means clustering using the *Jaccard* measure, and table MS-15 show the outcomes of the partitioning using the *Matching* measure.

TABLE MS13. Binary K-means Cluster Analysis (*Jaccard* Measure)

	Frequency	Percent
1	1,711	59.31
2	1,174	40.69
Total	2,885	100.00

	F8A	F8B	F8C	F8D	F8E	FEMALE	WHITE	UNEMPLY	NONUS
1	.6546	0	.7119	.5149	.0070	.5716	.9480	.3419	.0286
2	.9072	.6525	.8382	.7726	.4097	.5349	.7445	.3339	.0341
Total	.7574	.2655	.7633	.6198	.1709	.5567	.8652	.3386	.0308

Note: The starting centers are the random *k* observations.

In table MS-13, we see that observations are unevenly partitioned with group 1 having 60 percent of the total observations. Group 2 appears to be more risk averse. Most of the members in group 2 keep the surrounding of their house clean. They tend to spray herbicides while none of the group 1 members use herbicides. Group 2 members are more likely to purchase property insurance; they tend to keep firefighting equipment, and over 40 percent of them burn undergrowth around their homes. The proportions of females in each group are somewhat even, but 95 percent of group 1 members are white and less than 75 percent of group 2 members are white. Employment status and citizenship do not appear to distinguish the groups.

We re-ran the above procedure with different starting centers. The outcomes of the partitioning are shown in table MS-14.

TABLE MS14. Binary K-means Cluster Analysis (*Jaccard* Measure)

	Frequency	Percent
1	1,898	65.79
2	987	34.21
Total	2,885	100.00

	F8A	F8B	F8C	F8D	F8E	FEMALE	WHITE	UNEMPLY	NONUS
1	.7508	.2661	.7740	.5917	.1744	.5053	.8688	0	.0327
2	.7700	.2644	.7427	.6738	.1641	.6555	.8582	.9899	.0274
Total	.7574	.2655	.7633	.6198	.1709	.5567	.8652	.3386	.0308

Note: The starting centers are the first *k* observations.

Now group 1 is nearly two times the size of group 2. About half of group 1 members are female, and none of them are unemployed. There is no significant difference between the two groups when it comes to fire prevention. However, group 1 members are less likely to keep fire fighting equipment around their homes. The roles of race and citizenship appear to be unimportant in classifying the observations.

These results are inconsistent with what we have found earlier or at least we cannot conclude whether the demographic variables here have any effects on individuals' behavior toward fire risk.

TABLE MS15. Binary K-means Cluster Analysis (*Matching* Measure)

	Frequency	Percent
1	1,908	66.14
2	977	33.86
Total	2,885	100.00

	F8A	F8B	F8C	F8D	F8E	FEMALE	WHITE	UNEMPLY	NONUS
1	.7469	.2647	.7699	.5912	.1735	.5079	.8643	0	.0330
2	.7779	.2671	.7503	.6755	.1658	.6520	.8669	1	.0266
Total	.7574	.2655	.7633	.6198	.1709	.5567	.8652	.3386	.0308

Note: The starting centers are the first *k* observations.

Table MS-15 shows the outcomes of another partitioning. The results are similar to that of table MS-14. We observe that none of the group 1 members are unemployed, but all of group 2 members are unemployed. The roles of race and citizenship are also minor.

At this point, the outcomes of these procedures are inconclusive. However, these outcomes suggest unambiguously that citizenship is unlikely to affect people's attitude toward fire risk, and most people (in either group 1 or group 2) do not prefer using herbicides as a way to control undergrowth.

End Notes

1. There are two approaches to market segmentation – *a priori* and *post hoc* (Green 1977; Wind 1978). A segmentation method is *a priori* when the type and number of segments are determined in advance and *post hoc* when the type and number of segments are determined on the basis of the results of data analyses. Given the the purpose of our study, it is necessary to apply an a priori segmentation method.
2. Several (dis)similarity measures have been applied. The results produced by most these measures are similar in some way. Hence for illustration purposes, only two of them are reported here. Refer to the STATA manual for detailed descriptions of these measures.
3. The coefficient correlation of income and education is 0.42.

Appendix

In our study, the K-mean clustering approach is used to identify market segmentation of our data. The K-means clustering is a non-hierarchical partitioning approach that aims "to divide *M* points in *N* dimensions into *K* clusters so that the within-cluster sum of squares is minimized" (Hartigan and Wong 1979). In other words, observations in a sample are partitioned into different clusters and members of each cluster are to stay as close to each other as possible, and as far as possible from members in other clusters. Before this can occur, the number of clusters has to be specified a priori. Every cluster in the partition is defined by its own cluster members and by its center.

The center for each cluster is the point to which the sum of distances from all members in the cluster is minimized.

The K-means algorithm aims to cluster M data observations into K disjoint subsets S_j containing M_j members such that the objective function (A1) is minimized. The objective function is defined as:

$$J = \sum_{j=1}^{K} \sum_{m \in S_j} | x_m - \mu_j |^2, \qquad \text{(MS1)}$$

where x_m is a vector representing the mth observation and μ_j is the geometric center of the observations in S_j (Weisstein).

The number of clusters K must be determined a priori by researchers. The algorithm involves the following steps:

1. Select K points to serve as the initial group centers, one for each cluster.
2. Each observation is assigned to a cluster which has the closest center.
3. After all observations have been assigned, the K centers are recomputed.
4. Steps 2 and 3 are repeated until the observations no longer move from one cluster to another and the iterative procedure is terminated.

The resulting clusters are compact yet mutually exclusive. Different initial group centers will result in different clustering outcomes. Thus the procedure is usually run multiple times to mitigate this drawback.

Conclusions

This study focused on the broad topic of public values, attitudes, and behaviors toward wildfire and prescribed fire. The purpose of study is to contribute to development of a comprehensive understanding of public values, attitudes and behaviors related to forest fire and management. Unlike previous and ongoing research, the current study was designed to provide national or "macro" level information. Moreover, because of the large number of survey responses (6979) and covariates collected in this research, the conclusions reported below only scratch the surface of what may be available from these data.

The first objective stated in the Introduction was to: Obtain knowledge, attitude, and preference information from the general public regarding fire experience, fire risk, and fire management. A number of population-level findings related to this objective are presented in the Results I section of the report. In spite of less than 10 percent of the public feeling "concerned" about their home being subject to damage by forest fire, nearly half the public (48 percent) feels that wildfire is a leading environmental problem, while 56 percent feel that wildfire is destructive to long-term forest health.

Regarding experience, about a third (31 percent) of the public claim to have seen a forest fire in one form or another during their lifetime, while just over three-fourths (77 percent) of the public have seen, heard, or read about forest fires recently. Considering that approximately 80 percent of the population are urban dwellers and that most of the surveying for this study took place in fall and winter, the results suggest a reasonably high level of public awareness, at least very basically, with forest fire. This is especially true considering that only about 20 percent of the population considers the likelihood of a forest fire within 10 miles of their homes to be "very likely," but only about half this number (9 percent) feel concerned that their home could be damaged by forest fire.

Among those in the public that feel fire is at least "somewhat likely" in the vicinity of their private home (39 percent), a large proportion (75 percent) claim to regularly clear shrubs, leaves, and other combustible organic matter around buildings. Nearly as many keep their property insured against fire. Used to a much lesser extent for fire prevention are routine burning of underbrush (17 percent) and using chemical treatments to suppress vegetation (27 percent).

Public opinions related to fire management practices on large forests or public lands are obviously mixed. Nevertheless, the results of this research appear to have uncovered a few basic themes related to prescribed fire, government fire management, and personal responsibility. For example, while 58 percent of respondents felt that all wildfires should be put out regardless of location, 69 percent agreed that people choosing to live near rangelands and forests should be prepared to accept the inherent risk. In fact, only 11 percent of the public disagreed with this statement. By a nearly 7 to 1 ratio, this suggests a buyer-beware attitude on the part of the general public. Respondents also agreed by a 4 to 1 margin that, where wildfire is common, homeowners should have to follow government guidelines to manage for wildfire risk. The combination of the latter two results suggests that while personal responsibility is paramount, there is clearly a public interest in collective action and thus government involvement, at least in the form of developing guidelines is overwhelmingly supported by the public.

Public trust and confidence in public land management agencies' ability to manage wildfire was addressed by a number of questions in the survey. Overall, 68 percent of the public agreed that public land managers and forest professionals can be trusted to select the best methods for dealing with wildfire. Only 15 percent of respondents disagreed with this statement, while 17 percent were uncertain. While no agencies were singled out, the result suggests that by a ratio of more than 4 to 1, the public is confident that government land managers and fire professionals will successfully deal with fire related problems. Nevertheless, only a third of the public was "not concerned" about public land managers' ability to manage for fire in forests and rangelands. Thirty-eight percent were "concerned" regarding this statement. Together, this would appear to suggest that while trust does not appear to be an issue, ability and perhaps capacity is still a concern for the public.

Also, related to government trust, but in a more generic context, 71 percent of the public was "concerned" (54 percent) or "slightly concerned" (17 percent) that taxpayers costs be considered when developing fire management programs. Even more of the public (78 percent) expressed concern (64 percent) or slight concern (14 percent) that long-term forest health be considered when developing fire management programs. Together the questions and responses related to government suggest that while the public expresses considerable trust in land management professionals, they nonetheless seek a balance between program costs and environmental heath.

The results of this survey suggest the public has some fairly clear preferences about general fire management practices on public lands. For example, respondents were asked about their opinions on the general use of three management practices as part of a program for reducing fuel build-ups and wildfire management. This included prescribed burning, chemical treatments, and mechanical thinning. Over 90 percent agreed with the use of prescribed fire, with 5 percent disagreeing, and 4 percent uncertain. Fifty-eight percent of the public supported the use of mechanical thinning, with 12 percent disagreeing. A relatively large portion of respondents (30 percent) was uncertain. The uncertainty could be due to a perception of ambiguity about the meaning of mechanical thinning. The third and least favored of the management alternatives was chemical treatments to control vegetation. Only 30 percent agreed with the use of chemical treatments, while 47 percent disagreed and 22 percent were undecided. Again, while the questions are very broadly stated, the order of public acceptance for the above three fire management practices is very clear, prescribed fire and mechanical thinning are favored by the public by more than a 2 to 1 ratio over the use of chemical treatments.

While prescribed fire appears to be highly regarded as a management practice, its use is not without a number of public concerns. For example, around 40 percent of respondents expressed concern over smoke from prescribed fire, while a similar amount (42 percent) were also concerned about the effects on scenery and recreation opportunities. A larger proportion of the public (52 percent) was concerned about harm to fish and wildlife from prescribed fire. For context, it should be noted that initially only 75 percent of respondents professed to know the difference between wildfire and prescribed fire prior to those not knowing being read a brief definition of each.

Finally among management practices, although 55 percent of the public agreed that an area burned by wildfire should be left to recover naturally, 81 percent agreed that post-fire timber salvage made sense with only 8 percent disagreeing.

The second and third objectives stated in the Introduction were to: Identify and measure factors which condition individual responses toward fire, fire risk, fire management; and to: Test hypotheses relating to various social strata and fire knowledge and preferences. To accomplish this objective, we estimated regression equations for each of the questions in the survey. These equations included from 10 to 15 explanatory variables such as gender, race, age, income, employment, and spatial factors like region and population density. For specific relation of factors to responses, readers are referred to Appendix D of this report or to a spreadsheet tool available from the authors. A number of general patterns however can be identified.

Age

Older people tend to have more fire experience, and they tend to keep vegetation cleared near their house, purchase extra property insurance, and keep extra hoses and firefighting equipment around their house. The market segmentation analysis and regression results show that older people are not necessarily more knowledgeable about fire. However, older people tend to have more confidence in public land managers ability to deal with wildfire and they are less concerned about the side effects of prescribed fire.

Gender

We find that females tend to have less fire experience, and they tend to be a little more concerned about forest fire than males. Hence, they are more likely to have insurance coverage for their homes, and they tend to have extra hoses and fire fighting equipments around. Most females are also concerned or slightly concerned about the side effects of prescribed fire, but there is no statistically significant variation in the levels of concern between females and males when it comes to the government's environmental roles.

Race

The fire experiences, attitudes and opinions are rather different across races. It appears that blacks and Hispanics have relatively less forest fire experience or contact compared to whites. This may be related to the extent of their exposures to the news and their recreation or traveling plans. Hispanics, in particular, are more concerned about forest fire damaging their homes. Blacks, on the other hand, are less likely to have property insurance covering forest fire for their homes. Compared to whites, both blacks and Hispanics are less knowledgeable about forest fire according to our scale. They tend to be more concerned about the side effects of prescribed fire and the forest fire management programs. Additionally, they appear to have less confidence in public land managers and the government with respect to forest fire issues.

Education

People with more education tend to have more fire experience, and are more concerned about forest fire destroying their homes. Interestingly, we find that education is negatively associated with fire prevention practices like keeping vegetation cleared, purchasing extra property insurance and keeping extra hoses and firefighting equipments. As expected, people with more formal education tend to have more knowledge of forest fire. And as mentioned earlier, they tend to be less concerned about the side effects of prescribed fire, and they exhibit more confidence in public land managers and fire professionals and the government.

Income

As income increases, fire experience increases. This, however, does not lead to increased concern among people with higher earning with regard to the possibility of forest fire damaging their homes, because people with higher earning tend to have extra property insurance and keep their homes cleared from leaves, shrubs and vegetation. People with more income also tend to be more knowledgeable about forest fire and less concerned about the side effects of prescribed fire. Additionally, they tend to have more confidence in public land managers’ ability to deal with forest fire.

Immigration Status.

There appears to be no statistically significant variations in fire experience and opinions among US citizens and immigrants. However, immigrants tend to be less knowledgeable about forest fire and post-fire recovery.

Population Density

Expectedly, non-rural residents (urban residents especially) tend to have less forest fire experience but they are not necessarily less knowledgeable about forest fire, and urban residents are understandably less concerned about their houses being damaged by forest fire. We find that both urban and suburban residents are less likely to have extra hoses and firefighting equipments around. They are slightly more concerned than rural residents about reduced scenic quality and recreation opportunities from prescribed fire. However, there is no statistically significant variation in opinions among rural, urban and suburban residents with respect to the fire management practices and those responsible for implementation.

Geographical Regions

People who live in the North (and even the South) typically have less forest fire exposure, either through the media, or first hand, than people who live in the Pacific Coast or the Rocky Mountains. Moreover, people outside the North are much more likely to believe a forest fire could occur in the vicinity of their home and consequently are more concerned about forest fire damaging their homes. People from the Pacific and Rocky Mountain regions were also more likely to know the difference between prescribed and wildfire and less likely to think wildfire was destructive to long-term forest health. They were also less likely to think that all wildfires should be put out regardless of location. Interestingly, regional differences were minimal with respect to homeowners accepting the risks of living in fire prone areas and accepting government guidelines for managing risk. Trust in land managers and fire professionals to make the best decisions to manage for fire was somewhat higher in the North and South than in the Rocky Mountain and Pacific regions although the level of concern expressed about public land managers' ability to effectively deal with fire in forests and rangelands was more consistent across regions.

Employment Status

Unemployed people (including retired and students) tend to have less forest fire experience and knowledge though they may have heard about forest fire in the news. They appear to be more concerned about some of the side effects of prescribed fire and long-term ecosystem health, but they do seem to be less concerned about the cost government will incur when developing fire management programs.

Survey Time Frame

Our first survey was conducted in the post-fire season of 2002, while our second survey was conducted in the post-fire season in 2003. It seems puzzling to us that individuals in our second survey have relatively less fire experience than individuals in the first survey. For example, our second survey sample was significantly less likely to have seen, heard or read about forest fire around the time of survey (75 vs. 85 percent adjusted for sampling differences). We feel that this may be linked to the severity and consequent press coverage of the fire seasons prior to the survey. It could also be a sort of tuning out of information. Individuals in our second survey are also less likely to be concerned about forest fire damaging their homes (6 vs. 9 percent). There is no statistically significant variation in the fire prevention practices between individuals in the two surveys, except that people in the second survey are less likely to have extra property insurance. Compared to people in the first survey, people in the second survey tend to be less concerned about the side effects of prescribed fire, public land managers and forest professional's ability to manage forest fire, and government's roles in dealing with fire issues.

The final objective of this study was to: <u>Identify and develop market segments that can be specifically targeted by education and outreach efforts designed to enhance public understanding and support for science-based fire management regimes.</u> As reported in the Results II section of this report, the market segmentation analysis was somewhat ambiguous. We did find corroborating evidence using two clustering techniques that respondents who are more knowledgeable about fire show more confidence in forest professionals and trust in the government per managing for wildfire. The obvious implication is that increasing public knowledge of wildfire and related issues will enhance support for science-based management.

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Appendix A. NSRE2000 Questionnaire with Fire Module

INTRODUCTORY SCREENS

Hello, my name is _______________ and I am calling from the survey research center at the University of Tennessee. We are surveying a national sample of households to get people's opinions about opportunities for outdoor recreation in (name the state) and the rest of the U.S.

OR

Hello, this is _______________ calling for the University of Tennessee _ Knoxville. We recently called to conduct an interview with ____________. Is this a good time to complete the interview?

For this survey to be valid, I need to randomly select a person from your household to interview. In order to select that person, could you please tell me how many people there are living in your household 16 years of age or older?

Out of those _____ people, may I speak with the person who had the most recent birthday?

_____ Self _____ Someone else

NEW PERSON: Hello, my name is _______________ and I am calling from the survey research center at the University of Tennessee. We are surveying a national sample of households to get people's opinions about opportunities for outdoor recreations in (name the state) and the rest of the U.S.

IF IT'S THE PERSON ON THE PHONE: CONTINUE.

WHEN CORRECT PERSON ANSWERS REPEAT FIRST PARAGRAPH AND CONTINUE BELOW. IF PERSON IS NOT THERE AT THE TIME, FIND OUT WHEN TO CALL BACK.

Your opinions are very important to us and we are interviewing only a select number of people. Is this a good time to ask you some questions or would another time be better for you?

Callback: __________________________________ First Name: __________________

I want to assure you that all the information you give me will be kept strictly confidential. This interview is strictly voluntary. If you don't want to answer any particular question, just tell me. Also my supervisor may listen to part of the interview for quality control.

****

PARTICIPATION

I would like you to think about the outdoor recreation activities you took part in during the past 12 months. Include any outdoor activities you did around the home, on vacations, trips, or any other time. We are interested in a wide range of outdoor activities from walking, bicycling, and birdwatching to camping, boating, skiing, and so forth. To begin, during the past 12 months

QXX Did you go bicycling on backcountry roads, trails, or cross country, riding a mountain bike or hybrid bike?

1. Yes 8. Don't know
2. No 9. Refused

Q42 Did you go horseback riding on trails, back roads, or cross-country?

1. Yes 8. Don't know
2. No 9. Refused

Q45 Did you go picnicking?

1. Yes 8. Don't know
2. No 9. Refused

Q51 Did you go to a gathering of family or friends in an outdoor area away from a home?

1. Yes 8. Don't know
2. No 9. Refused

Q58 Did you visit an outdoor nature center, a nature trail, a visitor center, or a zoo?

1. Yes 8. Don't know
2. No <go to Q68> 9. Refused

Q83 Did you go day hiking?

1. Yes 8. Don't know
2. No 9. Refused

Q93 Did you go backpacking on trails or cross-country?

1. Yes 8. Don't know
2. No 9. Refused

Q101 Did you camp at developed sites with facilities such as tables and toilets?

<Developed sites are areas with improved roads, campsites and water taps, and sometimes with utility hookups, flush toilets, showers, stores, or laundry facilities>.

1. Yes 8. Don’t know
2. No 9. Refused

Q109 Did you camp at a primitive site without facilities?

<A primitive site is one you can drive into, but which has no improved roads, water taps, utility hookups, flush toilets, showers, stores, or laundry facilities>

1. Yes 8. Don’t know
2. No 9. Refused

Q131 Did you visit a wilderness or other primitive, road less area?

1. Yes 8. Don’t know
2. No 9. Refused

Q134 During the past 12 months, did you gather mushrooms, berries, firewood, or other natural products?

1. Yes 8. Don’t know
2. No <go to Q135> 9. Refused

Q136 During the past 12 months, did you view, identify, or photograph birds ?

1. Yes 8 Don’t know
2 NO <go to Q148> 9 Refused

Q142 During the past 12 months did you view, identify, or photograph wildlife besides birds for example, deer, bears, snakes, butterflies, turtles?

1. Yes 8. Don’t know
2. NO <go to Q148> 9. Refused

Q148 Did you view, identify, or photograph freshwater fish?

1. Yes 8. Don’t know
2. NO 9. Refused

Q151 During the past 12 months did you view, identify, or photograph wildflowers, trees, or other natural vegetation?

1. Yes 8. Don't know
2. NO <go to Q154> 9. Refused

Q154 During the past 12 months did you view or photograph natural scenery?

1. Yes 8. Don't know
2. NO 9. Refused

Q152 Did you go hunting during the past 12 months?

1. Yes 8. Don't know
2. NO < go to Q202> 9. Refused

Q171 Did you do any winter activities such as, snowboarding, skiing, snow shoeing, snowmobiling, or sledding in the past 12 months?

1. Yes 8. Don't know
2. No <go to Q202> 9. Refused

Q174 Did you go downhill skiing?

1. Yes 8. Don't know
2. No 9. Refused

Q173 Did you go snowboarding?

1. Yes 8. Don't know
2. No 9. Refused

Q180 Did you go cross-country skiing or ski touring?

1. Yes 8. Don't know
2. No 9. Refused

Q189 Did you go snowmobiling?

1. Yes 8. Don't know
2. No 9. Refused

Q203 Did you go sightseeing?

1. Yes 8. Don't know
2. NO <go to Q207> 9. Refused

Q207 Did you go driving for pleasure on country roads or in a park, forest, or other natural setting?

1. Yes 8. Don't know
2. NO <go to Q197> 9. Refused

Q197 Did you drive off-road for recreation using a 4-wheel drive, ATV, or motorcycle?

<Off-road is defined as off of paved or gravel roads. ATV stands for "All Terrain Vehicle".>

1. Yes 8. Don't know
2. NO <go to Q221> 9. Refused

Q222 Did you go freshwater fishing?

1. Yes 8. Don't know
2. No <go to Q241> 9. Refused

Q234 Did you go fishing in cold water such as mountain rivers, lakes, or streams for trout?

1. Yes 8. Don't know
2. No 9. Refused

Module for Woodsy Owl Questions – (Proprietary – 5 minutes)

Module for Charter Forest Questions – (Proprietary – 5 minutes)

NSRE2000 Fire Module

INTRO: Now we would like to ask you about fire in forests or rangeland and fire management.

PART I – Experience

Fire1.Have you seen, heard, or read about forest fires in the past 3 months?
1. Yes 8. Don't know
2. NO 9. Refused

Fire 2. Have you ever witnessed a forest fire?
1. Yes 8. Don't know
2. NO 9. Refused

Fire3. Have you ever seen a forest or rangeland soon after a fire burned through it?
1. Yes 8. Don't know
2. NO 9. Refused

Fire4. Have you ever altered your recreation or vacation plans because of a forest fire?
1. Yes 8. Don't know
2. NO 9. Refused

Fire5. Has forest fire smoke ever affected your visibility while traveling by car or by air?

1. Yes 8. Don't know
2. NO 9. Refused

Fire6. How likely do you think a forest fire could occur within 10 miles of your home?

1. Very Likely 8. Don't know
2. Somewhat Likely 9. Refused
3. Very Unlikely

IF Very Unlikely GO TO Question 9.

Fire7. How concerned are you that your home could be damaged by forest fire?

1. Concerned 8. Don't know
2. Slightly Concerned 9. Refused
3. Not Concerned

Fire8. Do you do any of the following to protect your home from forest fire?

8A. Keep leaves, shrubs, trees and vegetation cleared near buildings.

1. Yes 8. Don't know
2. NO 9. Refused

8B. Spray herbicides to control undergrowth.

1. Yes 8. Don't know
2. NO 9. Refused

8C. Purchase property insurance.

1. Yes 8. Don't know
2. NO 9. Refused

8D. Keep extra hoses and firefighting equipment around.

1. Yes 8. Don't know
2. NO 9. Refused

E. Routinely burn undergrowth around your home.

1. Yes 8. Don't know
2. NO 9. Refused

PART II -- Knowledge

Fire9. Do you know the difference between wildfire and prescribed fire (controlled burn)?

1. Yes 8. Don't know
2. NO 9. Refused

IF Yes GO TO Question 10.

Definitions:

Wildfire is an unplanned fire burning out of control in a forest or rangeland. It can be started by lightning or by people, either accidentally or intentionally.

Prescribed fire is a controlled burn set by professionals in a forest or rangeland under strict guidelines. Prescribed fire is often used to prevent build-ups of flammable woody materials that could result in intense wildfires.

(For questions 10 through 12, please ask half the sample, with the intro "for your state and region," and then ask the second half, with just please state whether....)
Random Introduction:
1. For your state or region
2. No intro

Fire10. **For your state or region**, please state whether you think the following statements are true, false, or you are uncertain.

10A. Most wildfires occur naturally.
1. True 8. Uncertain/don't know
2. False 9. Refused

10B. Wildfires are destructive to long-term forest or rangeland health.
1. True 8. Uncertain/don't know
2. False 9. Refused

10C. Wildfire is a leading environmental problem.
1. True 8. Uncertain/don't know
2. False 9. Refused

10D. Prescribed fires and wildfires have similar effects.
1. True 8. Uncertain/don't know
2. False 9. Refused

10E. Prescribed fires kill most large trees in the burned area.
1. True 8. Uncertain/don't know
2. False 9. Refused

Fire10a. **For your state or region**, please state whether you think the following statements are also true, false, or you are uncertain.

10aA. Prescribed fires reduce the risk of wildfire.
1. True 8. Uncertain/don't know
2. False 9. Refused

10aB. Prescribed fires regularly get out of control.
1. True 8. Uncertain/don't know
2. False 9. Refused

10aC. Fire increases chances of insect outbreaks and plant disease.
1. True 8. Uncertain/don't know
2. False 9. Refused

10aD. Many plants require fire as part of their life cycle.
1. True 8. Uncertain/don't know
2. False 9. Refused

10aE. Fire is useful to control undesirable weeds and plants.
1. True 8. Uncertain/don't know

2. False 9. Refused

PART III – Attitudes, Opinions, Preferences

Fire11. **For your state or region**, please state whether you agree, disagree, or are uncertain about the following statements.

11A. An area burned by wildfire should be left to recover naturally.
1. Agree 8. Uncertain/don't know
2. Disagree 9. Refused

11B. Wildfires in remote areas should be allowed to burn if human life or property is not threatened.
1. Agree 8. Uncertain/don't know
2. Disagree 9. Refused

11C. All wildfires should be put out, regardless of location.
1. Agree 8. Uncertain/don't know
2. Disagree 9. Refused

11D. Where wildfire is common, homeowners should have to follow government guidelines to manage for wildfire risk.
1. Agree 8. Uncertain/don't know
2. Disagree 9. Refused

11E. People who choose to live near forests or rangelands should be prepared to accept the risks of wildfire.
1. Agree 8. Uncertain/don't know
2. Disagree 9. Refused

Fire11a. **For your state or region**, please state whether you agree, disagree, or are uncertain about the following statements.

11aA. Public land managers should use mechanical vegetation removal as part of a wildfire management program.
1. Agree 8. Uncertain/don't know
2. Disagree 9. Refused

11aB. Public land managers should use chemical treatments to control ground vegetation as part of a wildfire management program.
1. Agree 8. Uncertain/don't know
2. Disagree 9. Refused

11aC. Public land managers and forest professionals can be trusted to select the best methods for dealing with wildfire.
1. Agree 8. Uncertain/don't know
2. Disagree 9. Refused

11aD. It makes sense to salvage and sell timber damaged by wildfire on public lands.
1. Agree 8. Uncertain/don't know
2. Disagree 9. Refused

11aE. Public land managers should use prescribed fire as part of a wildfire management program.
1. Agree 8. Uncertain/don't know

2. Disagree 9. Refused

Fire12. **For your state and region**, please state whether you are concerned, slightly concerned, or not concerned about the following:

12A. Smoke from prescribed fire.
1. Concerned 8. Uncertain/don't know
2. Slightly concerned 9. Refused
3. Not concerned

12B.Public land managers' ability to manage for fire in forests and rangeland.
1. Concerned 8. Uncertain/don't know
2. Slightly concerned 9. Refused
3. Not concerned

12C. Harm to fish and wildlife from prescribed fire
1. Concerned 8. Uncertain/don't know
2. Slightly concerned 9. Refused
3. Not concerned

12D. Reduced scenic quality and recreation opportunities from prescribed fire.
1. Concerned 8. Uncertain/don't know
2. Slightly concerned 9. Refused
3. Not concerned

12E. Taxpayer's costs will be considered when developing fire management programs.
1. Concerned 8. Uncertain/don't know
2. Slightly concerned 9. Refused
3. Not concerned

12F. Long-term forest health will be considered when developing fire management programs.
1. Concerned 8. Uncertain/don't know
2. Slightly concerned 9. Refused
3. Not concerned

DEMOGRAPHICS

FOR STATISTICAL PURPOSES, I NEED TO ASK YOU A FEW QUESTIONS ABOUT YOURSELF. PLEASE REMEMBER THAT ALL INFORMATION IS CONFIDENTIAL.

Q560 What is your zip code?
A. ENTER RESPONSE
- 98. Don't know
- 99. Refused

Q567 What is your age?

A. ENTER RESPONSE ****
- 98. Don't know

- 99. Refused

Q569 Record sex <*ask only if unsure*>

1. Male
2. Female
8. Don't know
9. Refused

Q569a Are you Spanish, Hispanic, or Latino?

1. Yes
2. NO <go to Q570>
8. Don't know
9. Refused

Q570 What race or races do you consider yourself to be? <*respondents may select more than one race*>

1. White <go to Q571b>
2. Black or African American <go to Q571b>
3. American Indian or Alaska Native <go to Q571b>
4. Asian <go to Q571>
5. Native Hawaiian or Other Pacific Islander <go to Q571a>
8. Don't know
9. Refused

Q571b Were you born in the United States?

1. Yes
2. No, but an American citizen born in another country
3. No <go to Q571c>
8. Don't know
9. Refused

Add Q What is your political party affiliation?

1. Democrat
2. Republican
3. Green Party
4. Independent
5. Other
6. No affiliation
7. Not sure
8. Refused

Q573 What is the highest degree or level of school that you have completed?

1. 8th grade or less
2. 9th _ 11th grade

3. High school graduate or GED
4. Some college <*or technical/trade school*>, but have not yet graduated
5. Associate's <*or technical/trade school*> degree (AA or AS)
6. Bachelor's degree (BA, AB, BS)
7. Master's degree
8. Professional degree (e.g., MD, DDS, DVM, JD)
9. Doctorate degree (PhD, EdD)
10. Other
11. Don't know
12. Refused

Q574 Are you currently employed?

1. Yes
2. No <go to Q576>
8. Don't know <go to Q576>
9. Refused <go to Q576>

Which of the following describes you? <*may answer more than one*>

Q576 Retired

1. Yes
2. No
8. Don't know
9. Refused

Q577 Student

1. Yes
2. No
8. Don't know
9. Refused

Q578 Full-time homemaker

1. Yes
2. No
8. Don't know
9. Refused

Which one of the following statements best describes the area within ½ mile of where you live?

- Old downtown area with little new development
- Newer residential area considered to be a part of the city with some new development underway
- Newly developing area with active housing and commercial development
- Area with scattered new residential and commercial development mixed with rural houses and farms
- Rural area with little new development

Do you or your spouse own land outside a city or town of 5 or more acres? (Y/N)

Q593a*2* Finally, I would like to ask about your annual income for last year. Would you be willing to tell us either your total family annual income to the nearest $1000 or the range your income was in?

1 Tell actual income
2 Give range <go to Q593B>
8 Don't know <go to Q600>
9 Refused/would give neither <go to Q600>

Q593A Counting all sources, such as wages, salaries, dividends, rents, royalties, etc., what was your <u>total family income</u> before taxes to the nearest $1,000?

A. ENTER RESPONSE ****<go to Q600>
98. Don't know <go to Q600>
99. Refused <go to Q600>

Q593b Counting all sources, such as wages, salaries, dividends, rents, royalties, etc., in what range was your annual TOTAL FAMILY income before taxes:

1. $4,999 or less
2. $5,000 to $9,999
3. $10,000 to $14,999
4. $15,000 to $19,999
5. $20,000 to $24,999
6. $25,000 to $34,999
7. $35,000 to $49,999
8. $50,000 to $74,999
9. $75,000 to $99,999
10. $100,000 to 149,999
11. $150,000 or more
12. Don't know
13. Refused

Q600 Thank you for taking the time to complete this survey.

REFUSAL QUESTIONS

Q594. So that I may complete my report on calls I make, can I ask you two quick questions?

1 Yes
2 No –> end of interview

Q594a. In the past 12 months, did you participate in any kind of outdoor recreation, from walking or birdwatching around your home to activities like camping, fishing, or swimming?

1 Yes
2 No
8 Don't know
9 Refused

Q596. What is your age?

A. ENTER RESPONSE
-98. Don't know

-99. Refused

Q598. Thank you very much for your time. Good Bye!

[RECORD GENDER]

1 MALE
2 FEMALE
8 DON'T KNOW

Interviewer: Do not ask this question, just code the appropriate answer. If unsure, then code as a Don't Know.

APPENDIX B. Variable Definitions

The data for our study was directly obtained from a fire-attitudes module that was developed and linked to the National Survey on Recreation and the Environment 2000 (NSRE 2000) which contains a series of questions about knowledge, attitudes, and preferences toward fire and fire management in wildland and wildland/urban interface areas. The NSRE 2000 is a multi-faceted telephone survey focusing on a variety of outdoor recreation behaviors and environmental issues.

The list of right-hand-side variables used in our study is as follows:

1. **AGES** – the respondent's age. This was obtained from question Q567 of the NSRE 2000 (What is your age?).

2. **EDUC_YR** – years of education. This was obtained from question Q573 of the NSRE 2000 (What is the highest level of school that you have completed?). The respondents were asked to choose from the following categories:
    1. 8th grade or less
    2. 9th-11th grade
    3. High school graduate or GED
    4. Some college
    5. Associate's degree
    6. Bachelor's degree
    7. Master's
    8. Professional degrees
    9. Doctorate degree
    10. Other
    11. Don't know
    12. Refused

    We consider respondents who chose category 1 have eight years of education, categories 2 and 3 twelve years, categories 4 and 5 fourteen years, category 6 sixteen years, categories 7 and 8 eighteen years, and category 9 twenty years. Categories 10, 11 and 12 were considered as missing values.

3. **F9** – binary variable indicating whether the respondent knew the difference between wildfire and prescribed fire. (NSRE: FIRE9)

4. **FEMALE** – gender variable, FEMALE = 1 for female. (NSRE: Q569)

5. **F1NEW** – binary variable indicating whether the respondent have seen, heard, or read about forest fires in the past 12 months. (NSRE: FIRE1)

6. **F6NEW** – binary variable indicating how likely the respondent thought a forest fire could occur within 10 miles of his/her home. F6NEW = 1 if respondent answered "very likely', 0 otherwise. (NSRE: FIRE6)

7. **F7NEW** – binary variable indicating how concerned was the respondent that his/her home could be damaged by forest fire. F7NEW = 1 if the respondent answered "concerned or slightly concerned", 0 otherwise. (NSRE: FIRE7)

8. **INTRO** – binary variable referring to whether an intro statement "In your state or region" was read to the respondent. (See column RANDINT in the data file)

9. **LNINC1** – log of total family income before taxes. This was computed from the range of total family income reported by NSRE: Q593B. The ranges of income were given as follows:
    1. $4,999 or less
    2. $5,000 to $9,999
    3. $10,000 to $14,999
    4. $15,000 to $19,999
    5. $20,000 to $24,999
    6. $25,000 to $34,999
    7. $35,000 to $49,999
    8. $50,000 to $74,999
    9. $75,000 to $99,999
    10. $100,000 to 149,999
    11. $150,000 or more
    12. Don't know
    13. Refused

    Since ranges of income cannot be used in a regression, a median income for each range listed above was chosen, with $2,500 and $200,000 as the respective lower and upper bounds of income. For examples, a respondent who chose the income range of $5,000 to $9,999 was assumed to have a pre-tax family income of $7,500, and a respondent who earned $150,000 or more was assumed to have a pre-tax family income of $200,000.

    Income is measured in terms of dollar, thus a unit of change in income is small and may not show any significant effects on the left-hand-side variable. In light of this, we took the natural log of income such that we can how percentage changes in income affect responses to our survey questions.

    Because a large number of respondents chose categories 12 and 13, we were left with a considerable amount of missing values (approximately 35%). Thus, for each module, we regressed income on demographic variables. The predicted income was then used to fill in the missing values.

10. **NEWDATA** – binary variable indicating the time frames (first or second) in which the survey was conducted. NEWDA = 1 if the survey was conducted within the second time frame (between late 2003 and early 2004). The first time frame is the period between July 2002 and March 2003.

11. **NONRU** – dummy variables indicating the types of residential area in which the respondent grew up. (NSRE: Q571b_2: Did you grow up in a rural, suburban, or urban area?)
    NONRU1 = Rural (base)
    NONRU2 = Urban
    NONRU3 = Near urban or suburban

12. **NONUS** – binary variable, NONUS = 1 if the respondent was not born in the US or the respondent is a foreign-born American citizen. (NSRE: Q571B)

13. **NONWH2 and NONWH3** – dummy variables, NONWH2 = 1 if the respondent is African American, and NONWH3 = 1 if the respondent is Hispanic, with non-Hispanic White as the base.

    Respondents of other races such as American Indian, Alaska Native, Asian, Native Hawaiian or other Pacific Islander which represent a small percentage (less than 2 percent respectively) of our sample were excluded from our study.

    (NOTE: In version 16 of our dataset, Hispanic was not included in the RACE column but was included in the data in a separate column called HISPANIC. This is different from dataset version 14 in which Hispanic was categorized as a race and was included in the RACE column. Hence, in version 16, NONWH3 = 1 if the respondent answered "Yes" for HISPANIC.)

14. **REGIONS** – we divided all respondents in our sample into four regional categories based upon the fips of the respondents' locations. The four regions are:
    REGION1 = North (base) - ME, NH, RI, MA, CT, VT, NY, NJ, PA, DE, MD, WV, IL, IN, OH, MI, WI, MN, IA, MO, DC
    REGION2 = South - VA, NC, SC, FL, GA, MS, AL, LA, TX, OK, AR, KY, TN
    REGION3 = Rocky Mountains/Great Plains - MT, ND, ID, WY, KS, CO, NE, SD, NM, AZ, NV, UT
    REGION4 = Pacific Coast - CA, WA, OR, AK, HI

15. **UNEMPLOY** – binary variable of the respondent's employment status, UNEMPLOY = 1 if the respondent was unemployed. (NSRE: Q574)

The left-hand-side variables are responses to the survey questions. They are qualitative and discrete in nature and are listed as follows:

1. Fire1-Fire5 (binary)
   Yes = 1, No = 0

2. Fire6 (ordered)
   - Very likely (base)

- Somewhat likely
- Very unlikely

3. Fire7 (ordered)
    - Concerned (base)
    - Slightly concerned
    - Not concerned

4. Fire8A – Fire8E (binary)
    Yes = 1, No = 0

5. Fire9 (binary)
    Yes = 1, No = 0

6. Fire10A – Fire10J (correct answers were chosen as the base).
    - True
    - False
    - Uncertain

7. Fire11A – Fire11J (multinomial)
    - Agree
    - Disagree (base)
    - Uncertain

8. Fire12A – Fire12F (ordered)
    - Concerned (base)
    - Slightly concerned
    - Not concerned

9. SCORE4: total score obtained by respondents on the 4 questions Fire10D, 10F, 10G, and 10J. The variable SCORE4 takes on integers from 0 to 4.

10. SCORE9: total score obtained by respondents on questions Fire10B through 10J. The variable SCORE9 takes on integers from 0 to 9. Fire10A was excluded because it has more than one correct answer depending upon the locations of respondents and whether the INTRO statement was read to them during the survey.

APPENDIX C. Descriptive Statistics

Table 1. Have you ever seen, heard, or read about forest fires in the past 3 months? (Fire Q1, n=6979).

	Yes	No	Don't know/ Refused
	(Percent)		
General public (Census weighted)	77.13	21.87	1.00
Gender			
Male	83.99	15.19	0.82
Female	78.25	20.48	1.28
Race			
White	82.19	16.72	1.09
Black	67.71	31.57	0.72
Hispanic	75.67	24.33	0.00
Education			
No college	77.04	21.96	0.99
College	81.98	16.98	1.04
Prof.	84.71	13.96	1.33
Household Income			
< $40,000	79.30	19.79	0.91
$40,000 - $80,000	81.40	17.32	1.27
> $80,000	83.13	16.11	0.76
Age			
<35	74.93	24.33	0.75
35-55	80.99	18.00	1.01
>55	86.01	12.51	1.47
Population density			
Rural	86.40	13.01	0.58
Urban	78.81	19.92	1.28
Near Urban	83.62	15.64	0.74
Region			
North	77.72	21.03	1.25
South	77.82	21.11	1.06
Rocky Mtns & G. Plains	88.96	10.54	0.50
Pacific	89.83	9.16	1.01

Table 2. Have you ever witnessed a forest fire? (Fire Q2, n=6979).

	Yes	No	Don't know/ Refused
	(Percent)		
General public (Census weighted)	30.80	69.02	0.18
Gender			
Male	44.28	55.56	0.16
Female	28.45	71.24	0.31
Race			
White	37.15	62.59	0.26
Black	18.07	81.93	0.00
Hispanic	22.26	77.74	0.00
Education			
No college	28.51	71.35	0.14
College	37.41	62.37	0.22
Prof.	42.26	57.26	0.47
Household Income			
< $40,000	29.51	70.31	0.18
$40,000 - $80,000	36.76	63.04	0.20
> $80,000	42.08	57.50	0.42
Age			
<35	27.31	72.49	0.20
35-55	37.88	61.77	0.35
>55	39.68	60.18	0.14
Population density			
Rural	46.78	53.22	0.00
Urban	32.89	66.85	0.26
Near Urban	37.40	62.31	0.29
Region			
North	23.57	76.23	0.20
South	34.91	64.91	0.19
Rocky Mtns & G. Plains	53.07	46.68	0.25
Pacific	58.21	41.29	0.50

Table 3. Have you ever seen a forest or rangeland soon after a fire burned through it? (Fire Q3, n=6979).

	Yes	No	Don't know/ Refused
	(Percent)		
General public (Census weighted)	60.42	39.38	0.20
Gender			
Male	72.62	27.25	0.13
Female	61.32	38.47	0.20
Race			
White	69.06	30.77	0.17
Black	42.17	57.35	0.48
Hispanic	53.12	46.88	0.00
Education			
No college	58.56	41.26	0.18
College	69.43	30.41	0.16
Prof.	71.42	28.40	0.19
Household Income			
< $40,000	59.24	40.63	0.14
$40,000 - $80,000	67.93	31.91	0.17
> $80,000	75.21	24.72	0.07
Age			
<35	57.36	42.29	0.35
35-55	70.53	29.44	0.03
>55	68.74	31.02	0.24
Population density			
Rural	74.12	25.73	0.15
Urban	64.61	35.17	0.22
Near Urban	67.24	32.65	0.11
Region			
North	56.16	43.61	0.23
South	65.56	34.35	0.09
Rocky Mtns & G. Plains	82.31	17.57	0.13
Pacific	85.30	14.40	0.30

Table 4. Have you ever altered your recreation or vacation plans because of a forest fire? (Fire Q4, n=6979).

	Yes	No	Don't know/ Refused
	(Percent)		
General public (Census weighted)	14.36	85.55	0.08
Gender			
Male	18.87	81.03	0.10
Female	15.72	84.13	0.15
Race			
White	17.73	82.15	0.12
Black	6.99	93.01	0.00
Hispanic	15.73	84.27	0.00
Education			
No college	10.08	89.83	0.09
College	19.52	80.37	0.11
Prof.	23.36	76.26	0.38
Household Income			
< $40,000	12.17	87.70	0.14
$40,000 - $80,000	18.16	81.77	0.07
> $80,000	22.78	77.08	0.14
Age			
<35	15.12	84.83	0.05
35-55	19.50	80.50	0.00
>55	15.65	83.92	0.43
Population density			
Rural	17.98	81.73	0.29
Urban	17.06	82.83	0.11
Near Urban	16.78	83.05	0.17
Region			
North	10.66	89.17	0.17
South	13.43	86.48	0.09
Rocky Mtns & G. Plains	33.12	66.88	0.00
Pacific	31.72	67.98	0.30

Table 5. Has forest fire smoke ever affected your visibility while traveling by car or by air? (Fire Q5, n=6979)

	Yes	No	Don't know/ Refused
	(Percent)		
General public (Census weighted)	31.23	68.48	0.29
Gender			
Male	41.03	58.61	0.36
Female	31.01	68.76	0.23
Race			
White	36.87	62.85	0.28
Black	22.41	77.35	0.24
Hispanic	24.63	75.07	0.30
Education			
No college	27.29	72.53	0.18
College	38.45	61.23	0.33
Prof.	42.26	57.26	0.47
Household Income			
< $40,000	29.23	70.45	0.32
$40,000 - $80,000	36.72	63.08	0.20
> $80,000	43.47	56.18	0.35
Age			
<35	28.01	71.79	0.20
35-55	40.22	59.50	0.28
>55	35.78	63.75	0.48
Population density			
Rural	42.54	57.02	0.44
Urban	34.18	65.49	0.33
Near Urban	35.62	64.15	0.23
Region			
North	24.60	75.07	0.33
South	37.41	62.13	0.46
Rocky Mtns & G. Plains	48.81	51.19	0.00
Pacific	52.97	46.83	0.20

Table 6. How likely do you think a forest fire could occur within 10 miles of your home? (Fire Q6, n=6979).

		Very likely	Somewhat likely	Very unlikely	Don't know/ Refused
		(Percent)			
General public (Census weighted)		19.83	18.96	60.62	0.59
Gender					
	Male	22.52	21.14	55.95	0.39
	Female	22.80	20.35	56.34	0.51
Race					
	White	23.30	21.64	54.70	0.37
	Black	17.83	14.22	66.75	1.20
	Hispanic	18.69	14.84	65.88	0.59
Education					
	No college	24.18	19.11	55.94	0.77
	College	22.53	21.33	55.78	0.36
	Prof.	20.42	21.37	57.93	0.28
Household Income					
	< $40,000	23.97	19.70	55.74	0.59
	$40,000 - $80,000	23.01	21.24	55.25	0.50
	> $80,000	21.11	20.49	58.26	0.14
Age					
	<35	19.45	21.64	58.46	0.45
	35-55	25.15	20.40	54.13	0.31
	>55	22.31	20.03	56.95	0.72
Population density					
	Rural	34.94	23.83	40.35	0.88
	Urban	18.25	19.34	61.97	0.44
	Near Urban	29.32	22.79	47.48	0.40
Region					
	North	15.45	20.73	63.26	0.56
	South	23.98	24.26	51.16	0.60
	Rocky Mtns & G. Plains	30.11	12.05	57.59	0.25
	Pacific	35.75	19.44	44.71	0.10

Table 7. How concerned are you that your home could be damaged by forest fire? (Fire Q7, n=6979).

		Concerned	Slightly concerned	Not concerned	Don't know/ Refused
		(Percent)			
General public (Census weighted)		8.92	10.95	79.94	0.19
Gender					
	Male	8.09	10.42	81.39	0.10
	Female	9.25	13.68	76.89	0.18
Race					
	White	8.34	12.50	79.04	0.12
	Black	13.01	9.16	77.59	0.24
	Hispanic	7.12	11.87	80.42	0.60
Education					
	No college	11.75	13.29	74.83	0.14
	College	7.77	12.03	80.07	0.14
	Prof.	5.98	10.92	83.00	0.09
Household Income					
	< $40,000	11.53	11.89	76.31	0.28
	$40,000 - $80,000	7.79	12.78	79.36	0.06
	> $80,000	6.04	12.22	81.67	0.07
Age					
	<35	7.11	12.59	80.15	0.15
	35-55	8.65	13.22	78.06	0.07
	>55	10.42	10.51	78.83	0.24
Population density					
	Rural	15.94	19.74	64.18	0.15
	Urban	6.38	9.58	83.86	0.17
	Near Urban	12.08	16.15	71.71	0.06
Region					
	North	6.37	9.44	83.99	0.20
	South	10.46	15.32	74.07	0.14
	Rocky Mtns & G. Plains	8.78	11.54	79.67	0.00
	Pacific	12.19	14.50	73.21	0.10

Table 8. Do you do any of the following to protect your home from forest fire? Keep leaves, shrubs, trees, and vegetation cleared near buildings. (Fire Q8A).

		Yes	No	Don't know/ Refused
		(Percent)		
General public (Census weighted) n=6979		29.21	70.32	0.47
General public (Census weighted) n=3055 (Conditional on Question 6 = very likely or somewhat likely.)		74.16	24.63	1.21
n=6979				
Gender				
	Male	32.15	67.46	0.39
	Female	33.54	66.13	0.33
Race				
	White	34.02	65.67	0.31
	Black	24.82	74.94	0.24
	Hispanic	25.82	73.00	1.18
Education				
	No college	34.12	65.61	0.27
	College	33.28	66.28	0.44
	Prof.	29.53	70.18	0.28
Household Income				
	< $40,000	33.82	65.68	0.50
	$40,000 - $80,000	33.48	66.19	0.33
	> $80,000	31.25	68.61	0.14
Age				
	<35	28.01	71.59	0.40
	35-55	34.84	64.95	0.20
	>55	34.82	64.65	0.52
Population density				
	Rural	48.39	51.46	0.15
	Urban	27.28	72.32	0.40
	Near Urban	41.35	58.30	0.34
Region				
	North	26.54	73.23	0.23
	South	38.24	61.39	0.37
	Rocky Mtns & G. Plains	30.99	68.38	0.63
	Pacific	41.99	57.50	0.50

Table 9. Do you do any of the following to protect your home from forest fire? Spray herbicides to control undergrowth. (Fire Q8B).

		Yes	No	Don't know/ Refused
		(Percent)		
General public (Census weighted) n=6979		10.52	88.56	0.93
General public (Census weighted) n=3055 (Conditional on Question 6= very likely or somewhat likely.)		26.70	70.95	2.35
n=6979				
Gender				
	Male	11.28	88.10	0.63
	Female	11.43	87.81	0.76
Race				
	White	11.69	87.74	0.57
	Black	10.36	88.43	1.20
	Hispanic	10.09	88.13	1.78
Education				
	No college	12.29	86.71	1.00
	College	11.32	88.11	0.57
	Prof.	9.97	89.55	0.47
Household Income				
	< $40,000	11.62	87.24	1.14
	$40,000 - $80,000	11.47	87.99	0.53
	> $80,000	11.46	88.06	0.49
Age				
	<35	10.05	88.91	1.05
	35-55	11.86	87.62	0.52
	>55	11.94	87.44	0.62
Population density				
	Rural	14.47	84.65	0.88
	Urban	9.47	89.82	0.71
	Near Urban	15.06	84.31	0.63
Region				
	North	6.70	92.84	0.46
	South	16.99	82.45	0.56
	Rocky Mtns & G. Plains	11.54	87.70	0.75
	Pacific	13.19	85.10	1.71

Table 10. Do you do any of the following to protect your home from forest fire? Purchase property insurance. (Fire Q8C).

		Yes	No	Don't know/ Refused
		(Percent)		
General public (Census weighted) n=6979		27.98	70.34	1.68
General public (Census weighted) n=3055 (Conditional on Question 6= very likely or somewhat likely.)		71.05	24.70	4.25
n=6979				
Gender				
	Male	31.79	67.19	1.02
	Female	33.00	65.44	1.56
Race				
	White	34.14	64.58	1.28
	Black	21.20	77.35	1.45
	Hispanic	22.85	75.37	1.78
Education				
	No college	30.73	67.28	1.99
	College	33.61	65.33	1.06
	Prof.	32.38	66.76	0.85
Household Income				
	< $40,000	28.87	69.13	2.00
	$40,000 - $80,000	34.48	64.38	1.14
	> $80,000	34.72	64.72	0.56
Age				
	<35	25.82	71.44	2.74
	35-55	35.89	63.31	0.80
	>55	33.97	65.37	0.67
Population density				
	Rural	45.18	53.22	1.61
	Urban	28.09	70.67	1.23
	Near Urban	38.66	59.91	1.43
Region				
	North	27.53	71.21	1.25
	South	37.27	61.44	1.30
	Rocky Mtns & G. Plains	29.99	68.76	1.25
	Pacific	38.67	59.72	1.61

Table 11. Do you do any of the following to protect your home from forest fire? Keep extra hoses and firefighting equipment around. (Fire Q8D).

		Yes	No	Don't know/ Refused
		(Percent)		
General public (Census weighted) n=6979		24.33	75.35	0.31
General public (Census weighted) n=3055 (Conditional on Question 6= very likely or somewhat likely.)		61.79	37.42	0.78
n=6979				
Gender				
	Male	24.79	74.95	0.26
	Female	28.63	71.17	0.20
Race				
	White	27.52	72.35	0.14
	Black	21.93	77.83	0.24
	Hispanic	19.58	78.93	1.48
Education				
	No college	29.82	70.00	0.19
	College	26.55	73.17	0.27
	Prof.	22.41	77.40	0.18
Household Income				
	< $40,000	28.96	70.77	0.28
	$40,000 - $80,000	27.42	72.31	0.27
	> $80,000	22.50	77.36	0.14
Age				
	<35	23.23	76.37	0.40
	35-55	28.36	71.50	0.13
	>55	28.40	71.41	0.20
Population density				
	Rural	42.40	57.31	0.30
	Urban	21.70	78.04	0.26
	Near Urban	34.36	65.52	0.11
Region				
	North	21.29	78.51	0.20
	South	31.25	68.70	0.05
	Rocky Mtns & G. Plains	27.23	72.52	0.25
	Pacific	34.24	65.06	0.70

Table 12. Do you do any of the following to protect your home from forest fire? Routinely burn undergrowth around your home. (Fire Q8E.)

		Yes	No	Don't know/ Refused
		(Percent)		
General public (Census weighted) n=6979		6.51	93.13	0.37
General public (Census weighted) n=3055 (Conditional on Question 6= very likely or somewhat likely.)		16.52	82.55	0.93
n=6979				
Gender				
	Male	7.63	92.11	0.26
	Female	7.21	92.36	0.43
Race				
	White	7.49	92.23	0.27
	Black	6.51	93.01	0.48
	Hispanic	5.34	93.47	1.18
Education				
	No college	9.44	90.24	0.32
	College	6.84	92.84	0.33
	Prof.	4.84	94.59	0.56
Household Income				
	< $40,000	8.35	91.19	0.45
	$40,000 - $80,000	6.69	92.88	0.43
	> $80,000	7.22	92.71	0.07
Age				
	<35	7.51	92.09	0.40
	35-55	7.85	91.87	0.27
	>55	6.61	92.96	0.43
Population density				
	Rural	16.52	82.75	0.73
	Urban	4.64	95.03	0.33
	Near Urban	10.94	88.77	0.29
Region				
	North	5.02	94.65	0.33
	South	9.77	90.00	0.23
	Rocky Mtns & G. Plains	7.53	92.10	0.38
	Pacific	9.26	90.03	0.70

Table 13. Do you know the difference between wildfire and prescribed fire (controlled burn)? (Fire Q9.)

		Yes	No	Don't know/ Refused
		(Percent)		
General public (Census weighted) n=6979		75.32	23.78	0.89
Gender				
	Male	87.9	11.67	0.42
	Female	78.83	20.37	0.79
Race				
	White	86.08	13.33	0.59
	Black	57.35	41.93	0.72
	Hispanic	61.72	37.09	1.19
Education				
	No college	74.51	24.49	1.00
	College	85.84	13.67	0.49
	Prof.	89.55	10.07	0.38
Household Income				
	< $40,000	78.39	20.97	0.64
	$40,000 - $80,000	83.71	15.55	0.74
	> $80,000	89.65	10.14	0.21
Age				
	<35	72.29	26.82	0.90
	35-55	87.76	11.89	0.35
	>55	85.92	13.32	0.76
Population density				
	Rural	88.60	11.26	0.15
	Urban	80.74	18.51	0.75
	Near Urban	85.68	13.80	0.52
Region				
	North	78.41	20.73	0.86
	South	82.55	16.99	0.46
	Rocky Mtns & G. Plains	92.60	6.78	0.63
	Pacific	88.52	11.18	0.30

Table 14. For your state or region, please state whether you think the following statements are true, false, or you are uncertain? Most wildfires occur naturally. (Fire Q10A.)

		True	False	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		38.19	48.01	13.82
Gender				
	Male	45.92	42.74	11.34
	Female	33.82	51.94	14.24
Race				
	White	39.23	48.05	12.72
	Black	33.01	51.57	15.42
	Hispanic	37.98	48.96	13.06
Education				
	No college	34.98	50.70	14.33
	College	39.13	48.51	12.36
	Prof.	47.29	40.55	12.16
Household Income				
	< $40,000	36.09	49.30	14.62
	$40,000 - $80,000	38.76	48.53	12.71
	> $80,000	44.10	45.42	10.49
Age				
	<35	35.82	50.75	13.43
	35-55	40.18	49.28	10.53
	>55	40.82	43.29	15.89
Population density				
	Rural	38.89	49.12	11.99
	Urban	39.92	47.33	12.75
	Near Urban	37.11	48.91	13.98
Region				
	North	38.73	47.87	13.40
	South	34.21	52.13	13.66
	Rocky Mtns & G. Plains	50.19	38.27	11.54
	Pacific	42.09	46.53	11.38

Table 15. For your state or region, please state whether you think the following statements are true, false, or you are uncertain? Wildfires are destructive to long-term forest or rangeland health. (Fire Q10B.)

		True	False	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		56.11	29.37	14.51
Gender				
	Male	43.66	45.60	10.75
	Female	57.87	27.40	14.72
Race				
	White	50.26	37.32	12.42
	Black	69.40	15.42	15.18
	Hispanic	60.24	21.07	18.69
Education				
	No college	62.68	22.91	14.42
	College	50.18	38.04	11.78
	Prof.	34.09	52.14	13.77
Household Income				
	< $40,000	60.42	25.06	14.53
	$40,000 - $80,000	50.00	37.83	12.18
	> $80,000	41.74	46.67	11.60
Age				
	<35	57.16	30.45	12.39
	35-55	46.67	42.06	11.27
	>55	53.24	30.73	16.03
Population density				
	Rural	53.65	33.19	13.16
	Urban	50.47	36.60	12.93
	Near Urban	54.01	32.76	13.23
Region				
	North	52.10	35.13	12.77
	South	56.62	29.40	13.99
	Rocky Mtns & G. Plains	44.29	43.41	12.30
	Pacific	45.52	42.20	12.28

Table 16. For your state or region, please state whether you think the following statements are true, false, or you are uncertain? Wildfire is a leading environmental problem. (Fire Q10C.)

		True	False	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		47.87	35.50	16.63
Gender				
	Male	35.27	51.45	13.28
	Female	49.85	30.75	19.41
Race				
	White	42.36	40.78	16.86
	Black	56.39	25.30	18.31
	Hispanic	52.23	31.75	16.02
Education				
	No college	52.24	30.46	17.31
	College	41.04	42.19	16.76
	Prof.	33.43	51.28	15.28
Household Income				
	< $40,000	52.43	30.64	16.94
	$40,000 - $80,000	40.60	41.64	17.76
	> $80,000	35.35	50.56	14.10
Age				
	<35	42.29	39.30	18.41
	35-55	39.48	44.54	15.97
	>55	50.24	33.63	16.13
Population density				
	Rural	44.59	37.87	17.54
	Urban	43.61	40.01	16.38
	Near Urban	42.90	39.81	17.29
Region				
	North	43.38	38.99	17.63
	South	47.22	36.20	16.57
	Rocky Mtns & G. Plains	40.03	45.29	14.68
	Pacific	38.77	45.32	15.91

Table 17. For your state or region, please state whether you think the following statements are true, false, or you are uncertain? Prescribed fires and wildfires have similar effects. (Fire Q10D.)

		True	False	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		44.51	37.75	17.75
Gender				
	Male	48.03	39.78	12.19
	Female	39.01	41.16	19.84
Race				
	White	42.17	41.49	16.35
	Black	47.23	34.70	18.07
	Hispanic	45.99	35.91	18.10
Education				
	No college	45.68	34.21	20.11
	College	42.08	42.88	15.04
	Prof.	39.70	46.44	13.87
Household Income				
	< $40,000	44.30	35.77	19.93
	$40,000 - $80,000	43.08	41.67	15.25
	> $80,000	41.04	45.76	13.19
Age				
	<35	43.63	38.31	18.06
	35-55	43.36	43.11	13.53
	>55	41.48	39.34	19.17
Population density				
	Rural	47.22	36.11	16.67
	Urban	42.21	41.79	16.01
	Near Urban	42.90	39.23	17.87
Region				
	North	42.06	40.31	17.63
	South	42.78	40.79	16.43
	Rocky Mtns & G. Plains	46.68	39.65	13.68
	Pacific	42.50	41.79	15.71

Table 18. For your state or region, please state whether you think the following statements are true, false, or you are uncertain? Prescribed fires kill most large trees in the burned area. (Fire Q10E.)

		True	False	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		32.51	45.90	21.59
Gender				
	Male	22.95	61.57	15.48
	Female	27.04	47.03	25.92
Race				
	White	23.16	55.78	21.07
	Black	42.65	35.42	21.93
	Hispanic	35.01	38.87	26.11
Education				
	No college	36.65	41.75	21.60
	College	21.27	57.42	21.30
	Prof.	15.00	63.91	21.08
Household Income				
	< $40,000	33.82	45.12	21.07
	$40,000 - $80,000	22.74	56.62	20.63
	> $80,000	15.90	61.74	22.36
Age				
	<35	28.11	46.77	25.12
	35-55	21.35	59.26	19.39
	>55	27.83	51.43	20.74
Population density				
	Rural	26.46	55.99	17.54
	Urban	24.44	52.63	22.93
	Near Urban	26.86	54.01	19.13
Region				
	North	27.01	48.50	24.50
	South	25.97	55.60	18.43
	Rocky Mtns & G. Plains	24.72	57.47	17.82
	Pacific	18.73	59.62	21.65

Table 19. For your state or region, please state whether you think the following statements are also true, false, or you are uncertain? Prescribed fires reduce the risk of wildfire. (Fire Q10F.)

		True	False	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		73.64	10.62	15.74
Gender				
	Male	84.35	7.03	8.62
	Female	74.74	9.23	16.03
Race				
	White	81.30	7.13	11.57
	Black	60.00	17.83	22.17
	Hispanic	70.03	12.17	17.80
Education				
	No college	70.49	11.43	18.08
	College	81.84	7.08	11.08
	Prof.	86.61	5.79	7.60
Household Income				
	< $40,000	71.58	10.39	18.02
	$40,000 - $80,000	81.74	7.66	10.61
	> $80,000	86.18	5.56	8.26
Age				
	<35	73.13	11.44	15.42
	35-55	83.05	7.19	9.76
	>55	78.54	6.71	14.75
Population density				
	Rural	78.80	7.89	13.30
	Urban	79.25	8.13	12.61
	Near Urban	77.78	8.76	13.46
Region				
	North	76.00	8.88	15.12
	South	78.89	8.89	12.23
	Rocky Mtns & G. Plains	82.69	8.03	9.29
	Pacific	84.29	5.24	10.47

Table 20. For your state or region, please state whether you think the following statements are also true, false, or you are uncertain? Prescribed fires regularly get out of control. (Fire Q10G.)

		True	False	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		26.60	57.56	15.85
Gender				
	Male	18.61	68.54	12.86
	Female	22.01	61.15	16.84
Race				
	White	18.77	66.48	14.75
	Black	39.28	45.78	14.94
	Hispanic	26.41	56.97	16.62
Education				
	No college	31.36	51.02	17.63
	College	16.74	69.51	13.76
	Prof.	10.45	75.21	14.34
Household Income				
	< $40,000	29.82	54.02	16.16
	$40,000 - $80,000	17.32	67.66	15.02
	> $80,000	11.53	75.63	12.85
Age				
	<35	21.09	61.44	17.46
	35-55	16.29	70.14	13.56
	>55	25.78	59.18	15.03
Population density				
	Rural	28.51	57.46	14.04
	Urban	18.55	65.84	15.61
	Near Urban	22.57	63.12	14.32
Region				
	North	20.57	62.50	16.93
	South	21.48	64.31	14.22
	Rocky Mtns & G. Plains	20.95	67.13	11.92
	Pacific	18.03	67.77	14.20

Table 21. For your state or region, please state whether you think the following statements are also true, false, or you are uncertain? Fire increases chances of insect outbreaks and plant disease. (Fire Q10H.)

		True	False	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		26.18	46.15	27.67
Gender				
	Male	20.68	57.43	21.90
	Female	22.78	46.09	31.13
Race				
	White	20.13	52.51	27.36
	Black	36.63	37.11	26.27
	Hispanic	30.56	40.36	29.08
Education				
	No college	27.65	43.88	28.47
	College	20.65	53.05	26.31
	Prof.	14.43	59.26	26.30
Household Income				
	< $40,000	25.65	45.39	28.96
	$40,000 - $80,000	21.10	52.78	26.12
	> $80,000	17.08	57.22	25.69
Age				
	<35	27.71	44.78	27.51
	35-55	18.45	55.11	26.43
	>55	21.12	51.19	27.69
Population density				
	Rural	22.66	54.97	22.37
	Urban	22.00	49.97	28.03
	Near Urban	21.42	51.95	26.63
Region				
	North	21.59	49.65	28.76
	South	24.35	49.44	26.21
	Rocky Mtns & G. Plains	20.70	57.34	21.96
	Pacific	18.63	53.07	28.30

Table 22. For your state or region, please state whether you think the following statements are also true, false, or you are uncertain? Many plants require fire as part of their life cycle. (Fire Q10I.)

		True	False	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		50.42	29.93	19.66
Gender				
	Male	66.01	20.22	13.78
	Female	49.92	27.48	22.60
Race				
	White	59.70	21.74	18.56
	Black	31.81	48.19	20.00
	Hispanic	38.87	38.87	22.26
Education				
	No college	46.05	32.08	21.87
	College	59.80	22.48	17.72
	Prof.	69.99	14.62	15.38
Household Income				
	< $40,000	49.80	29.19	21.02
	$40,000 - $80,000	58.73	23.81	17.46
	> $80,000	64.93	17.78	17.29
Age				
	<35	49.10	32.49	18.41
	35-55	60.76	21.97	17.26
	>55	59.13	19.79	21.07
Population density				
	Rural	59.21	22.95	17.84
	Urban	56.01	25.30	18.69
	Near Urban	58.36	22.39	19.24
Region				
	North	54.94	25.72	19.34
	South	50.28	28.66	21.07
	Rocky Mtns & G. Plains	69.89	16.06	14.05
	Pacific	66.97	17.42	15.61

Table 23. For your state or region, please state whether you think the following statements are also true, false, or you are uncertain? Fire is useful to control undesirable weeds and plants. (Fire Q10J.)

		True	False	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		62.43	23.70	13.88
Gender				
	Male	71.24	18.70	10.06
	Female	61.96	22.14	15.90
Race				
	White	68.32	18.75	12.94
	Black	52.53	34.94	12.53
	Hispanic	53.41	28.78	17.81
Education				
	No college	63.90	22.23	13.88
	College	66.72	20.34	12.94
	Prof.	68.09	18.33	13.58
Household Income				
	< $40,000	65.32	20.88	13.80
	$40,000 - $80,000	66.12	21.07	12.81
	> $80,000	68.75	18.54	12.71
Age				
	<35	62.59	23.38	14.03
	35-55	65.99	20.86	13.14
	>55	69.12	17.75	13.13
Population density				
	Rural	73.68	15.35	10.96
	Urban	63.29	22.69	14.02
	Near Urban	69.87	17.41	12.72
Region				
	North	62.53	22.58	14.89
	South	67.64	20.42	11.95
	Rocky Mtns & G. Plains	74.15	14.68	11.17
	Pacific	66.16	20.04	13.80

Table 24. For your state or region, please state whether you agree, disagree, or are uncertain about the following statements? An area burned by wildfire should be left to recover naturally. (Fire Q11A.)

		Agree	Disagree	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		54.67	29.03	16.30
Gender				
	Male	62.13	24.92	12.95
	Female	52.63	26.99	20.38
Race				
	White	58.25	24.61	17.14
	Black	45.78	38.80	15.42
	Hispanic	45.70	38.58	15.73
Education				
	No college	55.67	27.29	17.04
	College	55.81	26.50	17.70
	Prof.	62.11	22.70	15.19
Household Income				
	< $40,000	54.88	27.51	17.61
	$40,000 - $80,000	57.09	26.19	16.73
	> $80,000	59.31	24.51	16.28
Age				
	<35	59.10	26.97	13.93
	35-55	55.32	27.03	17.65
	>55	56.52	23.98	19.51
Population density				
	Rural	55.70	26.75	17.54
	Urban	57.18	26.07	16.75
	Near Urban	56.13	25.89	17.99
Region				
	North	60.48	22.78	16.74
	South	55.74	26.71	17.55
	Rocky Mtns & G. Plains	53.07	29.49	16.44
	Pacific	50.65	32.12	17.22

Table 25. For your state or region, please state whether you agree, disagree, or are uncertain about the following statements? Wildfires in remote areas should be allowed to burn if human life or property is not threatened. (Fire Q11B.)

		Agree	Disagree	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		35.94	51.31	12.75
Gender				
	Male	44.21	44.84	10.95
	Female	35.20	49.95	14.86
Race				
	White	39.93	46.52	13.55
	Black	23.86	66.75	9.40
	Hispanic	35.91	53.41	10.68
Education				
	No college	31.13	56.12	12.74
	College	39.68	47.28	13.05
	Prof.	53.94	32.29	13.77
Household Income				
	< $40,000	35.13	51.75	13.12
	$40,000 - $80,000	38.26	48.39	13.34
	> $80,000	47.22	40.49	12.29
Age				
	<35	34.18	56.32	9.50
	35-55	40.43	46.95	12.63
	>55	42.20	40.49	17.32
Population density				
	Rural	36.99	49.85	13.16
	Urban	39.55	47.40	13.05
	Near Urban	39.00	47.65	13.34
Region				
	North	38.66	48.37	12.98
	South	32.96	53.01	14.03
	Rocky Mtns & G. Plains	48.18	38.14	13.68
	Pacific	46.93	41.79	11.28

Table 26. For your state or region, please state whether you agree, disagree, or are uncertain about the following statements? All wildfires should be put out, regardless of location. (Fire Q11C.)

		Agree	Disagree	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		58.18	33.22	8.60
Gender				
	Male	42.90	48.88	8.22
	Female	54.17	35.28	10.56
Race				
	White	46.32	43.64	10.05
	Black	80.00	15.66	4.34
	Hispanic	69.14	24.33	6.53
Education				
	No college	66.11	24.36	9.54
	College	46.38	44.41	9.22
	Prof.	24.22	65.34	10.44
Household Income				
	< $40,000	60.42	30.10	9.49
	$40,000 - $80,000	48.03	42.54	9.43
	> $80,000	35.28	55.49	9.24
Age				
	<35	59.85	32.74	7.41
	35-55	45.10	44.96	9.94
	>55	44.96	44.05	10.99
Population density				
	Rural	51.61	39.62	8.77
	Urban	48.01	42.56	9.43
	Near Urban	51.78	38.14	10.08
Region				
	North	49.29	40.01	10.70
	South	56.34	35.09	8.57
	Rocky Mtns & G. Plains	39.27	50.94	9.79
	Pacific	42.09	50.05	7.85

Table 27. For your state or region, please state whether you agree, disagree, or are uncertain about the following statements? Where wildfire is common, homeowners should have to follow government guidelines to manage for wildfire risk. (Fire Q11D.)

		Agree	Disagree	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		65.66	16.56	17.77
Gender				
	Male	76.89	12.62	10.49
	Female	65.75	13.70	20.56
Race				
	White	72.97	11.47	15.57
	Black	53.73	26.02	20.24
	Hispanic	57.27	22.55	20.18
Education				
	No college	64.35	17.13	18.53
	College	74.41	11.10	14.49
	Prof.	70.85	12.35	16.81
Household Income				
	< $40,000	65.91	15.43	18.66
	$40,000 - $80,000	72.41	12.41	15.18
	> $80,000	76.11	10.69	13.20
Age				
	<35	64.88	17.66	17.46
	35-55	73.88	11.65	14.47
	>55	71.50	11.08	17.41
Population density				
	Rural	77.05	10.82	12.13
	Urban	68.54	14.20	17.26
	Near Urban	73.31	11.57	15.12
Region				
	North	67.51	13.90	18.58
	South	71.48	13.66	14.86
	Rocky Mtns & G. Plains	77.42	9.66	12.93
	Pacific	72.41	12.99	14.60

Table 28. For your state or region, please state whether you agree, disagree, or are uncertain about the following statements? People who choose to live near forests or rangelands should be prepared to accept the risks of wildfire. (Fire Q11E.)

		Agree	Disagree	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		69.20	10.81	19.99
Gender				
	Male	79.62	8.32	12.07
	Female	68.63	9.36	22.00
Race				
	White	75.18	7.94	16.88
	Black	59.28	17.83	22.89
	Hispanic	66.77	13.35	19.88
Education				
	No college	66.02	11.12	22.87
	College	76.65	7.93	15.42
	Prof.	78.16	7.50	14.34
Household Income				
	< $40,000	68.04	10.44	21.52
	$40,000 - $80,000	74.98	8.33	16.69
	> $80,000	80.69	6.94	12.36
Age				
	<35	70.25	9.90	19.85
	35-55	75.90	7.95	16.15
	>55	73.03	9.18	17.79
Population density				
	Rural	72.08	9.94	17.98
	Urban	73.33	9.01	17.66
	Near Urban	74.11	8.13	17.76
Region				
	North	71.08	9.38	19.54
	South	75.42	8.89	15.70
	Rocky Mtns & G. Plains	77.79	7.15	15.06
	Pacific	72.61	8.76	18.63

Table 29. For your state or region, please state whether you agree, disagree, or are uncertain about the following statements? Public land managers should use mechanical vegetation removal as part of a wildfire management program. (Fire Q11aA.)

		Agree	Disagree	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		57.61	12.02	30.37
Gender				
	Male	65.94	13.38	20.67
	Female	51.76	10.76	37.47
Race				
	White	58.22	11.54	30.25
	Black	54.70	13.49	31.81
	Hispanic	61.42	12.46	26.11
Education				
	No college	57.43	11.88	30.68
	College	58.33	12.00	29.67
	Prof.	58.21	11.68	30.10
Household Income				
	< $40,000	55.97	11.76	32.27
	$40,000 - $80,000	58.76	11.67	29.57
	> $80,000	60.07	12.43	27.50
Age				
	<35	55.42	13.38	31.19
	35-55	56.89	12.70	30.42
	>55	61.94	9.37	28.69
Population density				
	Rural	58.48	13.60	27.93
	Urban	57.33	11.72	30.95
	Near Urban	59.51	11.68	28.81
Region				
	North	54.41	12.51	33.08
	South	58.19	10.93	30.88
	Rocky Mtns & G. Plains	63.49	13.05	23.47
	Pacific	64.05	11.18	24.77

Table 30. For your state or region, please state whether you agree, disagree, or are uncertain about the following statements? Public land managers should use chemical treatments to control ground vegetation as part of a wildfire management program. (Fire Q11aB.)

		Agree	Disagree	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		30.14	47.44	22.42
Gender				
	Male	31.10	52.30	16.61
	Female	24.51	49.16	26.33
Race				
	White	26.76	51.05	22.19
	Black	31.57	47.95	20.48
	Hispanic	35.31	42.14	22.55
Education				
	No college	32.26	45.19	22.55
	College	25.62	53.08	21.30
	Prof.	23.36	53.18	23.46
Household Income				
	< $40,000	30.05	47.62	22.33
	$40,000 - $80,000	25.55	52.54	21.90
	> $80,000	27.36	51.94	20.70
Age				
	<35	26.32	52.54	21.14
	35-55	24.31	53.99	21.70
	>55	32.78	43.67	23.55
Population density				
	Rural	33.19	47.95	18.86
	Urban	25.54	51.64	22.82
	Near Urban	30.13	48.40	21.48
Region				
	North	24.07	53.28	22.65
	South	32.04	45.32	22.64
	Rocky Mtns & G. Plains	30.49	49.94	19.58
	Pacific	25.28	53.47	21.25

Table 31. For your state or region, please state whether you agree, disagree, or are uncertain about the following statements? Public land managers and forest professionals can be trusted to select the best methods for dealing with wildfire. (Fire Q11aC.)

		Agree	Disagree	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		68.24	14.70	17.06
Gender				
	Male	68.57	16.73	14.69
	Female	67.15	13.68	19.18
Race				
	White	68.49	14.44	17.07
	Black	61.20	20.24	18.55
	Hispanic	68.25	15.43	16.32
Education				
	No college	70.22	13.74	16.04
	College	66.45	15.89	17.67
	Prof.	67.14	14.72	18.14
Household Income				
	< $40,000	68.54	13.75	17.70
	$40,000 - $80,000	67.59	15.55	16.85
	> $80,000	68.06	15.21	16.74
Age				
	<35	69.70	14.63	15.67
	35-55	65.40	16.32	18.27
	>55	68.98	13.61	17.41
Population density				
	Rural	64.62	16.23	19.15
	Urban	67.88	14.99	17.13
	Near Urban	68.50	14.60	16.90
Region				
	North	69.03	14.06	16.90
	South	70.69	12.41	16.90
	Rocky Mtns & G. Plains	63.86	18.44	17.69
	Pacific	60.32	20.85	18.83

Table 32. For your state or region, please state whether you agree, disagree, or are uncertain about the following statements? It makes sense to salvage and sell timber damaged by wildfire on public lands. (Fire Q11aD.)

		Agree	Disagree	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		80.68	7.66	11.66
Gender				
	Male	80.51	10.16	9.33
	Female	81.62	6.21	12.17
Race				
	White	81.36	7.87	10.78
	Black	80.00	8.43	11.57
	Hispanic	81.90	7.12	10.98
Education				
	No college	78.58	7.95	13.47
	College	81.62	8.48	9.90
	Prof.	85.38	5.98	8.64
Household Income				
	< $40,000	79.35	7.99	12.66
	$40,000 - $80,000	81.24	7.86	10.90
	> $80,000	85.14	7.99	6.88
Age				
	<35	84.58	7.01	8.41
	35-55	80.47	9.07	10.46
	>55	78.69	7.28	14.04
Population density				
	Rural	74.85	12.57	12.58
	Urban	83.62	6.70	9.67
	Near Urban	77.03	9.34	13.63
Region				
	North	81.31	7.36	11.33
	South	81.34	7.50	11.15
	Rocky Mtns & G. Plains	80.68	9.66	9.66
	Pacific	80.36	9.26	10.37

Table 33. For your state or region, please state whether you agree, disagree, or are uncertain about the following statements? Public land managers should use prescribed fire as part of a wildfire management program. (Fire Q11aE.)

		Agree	Disagree	Uncertain/ Refused
		(Percent)		
General public (Census weighted) n=6979		90.90	5.30	3.80
Gender				
	Male	94.61	2.86	2.53
	Female	90.24	5.65	4.12
Race				
	White	93.03	3.74	3.23
	Black	84.34	11.57	4.10
	Hispanic	88.43	6.82	4.75
Education				
	No college	90.15	5.74	4.12
	College	92.89	3.94	3.17
	Prof.	93.92	3.32	2.75
Household Income				
	< $40,000	90.97	5.08	3.95
	$40,000 - $80,000	92.58	4.11	3.31
	> $80,000	94.51	3.40	2.08
Age				
	<35	91.74	5.32	2.94
	35-55	92.54	4.05	3.42
	>55	92.01	4.09	3.90
Population density				
	Rural	92.98	4.24	2.78
	Urban	92.17	4.48	3.34
	Near Urban	91.75	4.35	3.90
Region				
	North	91.61	4.79	3.60
	South	90.69	5.42	3.89
	Rocky Mtns & G. Plains	94.86	2.51	2.64
	Pacific	94.76	2.72	2.52

Table 34. For your state or region, please state whether you are concerned, slightly concerned, or not concerned about the following: Smoke from prescribed fire. (Fire Q12A.)

		Concerned	Slightly concerned	Not concerned	Don't know/ Refused
		(Percent)			
General public (Census weighted)		39.92	14.91	42.32	2.86
Gender					
	Male	25.64	15.68	56.97	1.71
	Female	38.16	16.59	42.69	2.55
Race					
	White	29.54	16.74	51.76	1.95
	Black	60.24	10.36	26.27	3.13
	Hispanic	51.34	13.35	33.23	2.08
Education					
	No college	40.71	15.50	39.90	3.89
	College	30.33	16.43	51.93	1.33
	Prof.	24.12	16.81	57.64	1.42
Household Income					
	< $40,000	40.99	15.16	40.58	3.27
	$40,000 - $80,000	30.13	16.69	51.44	1.74
	> $80,000	23.26	16.88	59.03	0.83
Age					
	<35	31.59	18.01	49.05	1.34
	35-55	28.11	16.57	53.89	1.43
	>55	40.29	13.94	41.72	4.05
Population density					
	Rural	32.75	17.40	47.81	2.05
	Urban	32.62	16.05	49.42	1.91
	Near Urban	33.22	16.09	47.71	2.97
Region					
	North	31.10	15.12	51.47	2.31
	South	35.56	16.99	45.09	2.36
	Rocky Mtns & G. Plains	30.61	16.81	50.44	2.14
	Pacific	33.64	17.22	47.63	1.51

Table 35. For your state or region, please state whether you are concerned, slightly concerned, or not concerned about the following: Public land managers' ability to manage for fire in forests and rangeland. (Fire Q12B.)

		Concerned	Slightly concerned	Not concerned	Don't know/ Refused
		(Percent)			
General public (Census weighted)		38.20	20.19	32.94	8.67
Gender					
	Male	33.23	21.83	39.25	5.69
	Female	33.54	22.16	34.64	9.66
Race					
	White	30.87	22.66	38.46	8.01
	Black	56.63	14.70	22.89	5.78
	Hispanic	43.92	20.47	27.89	7.72
Education					
	No college	39.54	20.20	30.73	9.54
	College	31.80	22.61	38.12	7.46
	Prof.	26.12	23.74	44.44	5.69
Household Income					
	< $40,000	39.63	20.25	30.10	10.03
	$40,000 - $80,000	30.94	22.84	38.93	7.29
	> $80,000	27.22	23.82	43.96	5.00
Age					
	<35	30.90	23.18	40.70	5.22
	35-55	31.50	23.58	38.96	5.96
	>55	38.49	18.79	29.54	13.18
Population density					
	Rural	32.46	23.68	35.82	8.04
	Urban	33.59	21.74	37.15	7.52
	Near Urban	33.39	22.11	35.57	8.93
Region					
	North	32.42	19.91	39.68	7.99
	South	32.64	23.06	36.62	7.68
	Rocky Mtns & G. Plains	34.88	21.08	35.76	8.28
	Pacific	37.06	26.99	28.00	7.95

Table 36. For your state or region, please state whether you are concerned, slightly concerned, or not concerned about the following: Harm to fish and wildlife from prescribed fire. (Fire Q12C.)

		Concerned	Slightly concerned	Not concerned	Don't know/ Refused
		(Percent)			
General public (Census weighted)		52.31	16.64	25.95	5.10
Gender					
	Male	40.73	18.21	37.41	3.65
	Female	50.64	19.45	24.72	5.19
Race					
	White	44.03	19.77	32.00	4.20
	Black	69.64	12.53	12.29	5.54
	Hispanic	57.86	14.24	22.85	5.04
Education					
	No college	55.17	15.00	23.59	6.24
	College	44.68	20.48	31.31	3.53
	Prof.	34.00	21.65	40.84	3.51
Household Income					
	< $40,000	53.79	16.52	23.69	6.00
	$40,000 - $80,000	45.02	19.80	31.47	3.71
	> $80,000	36.32	21.74	39.10	2.85
Age					
	<35	50.70	19.70	26.42	3.18
	35-55	41.72	20.54	34.29	3.45
	>55	48.48	15.89	28.40	7.23
Population density					
	Rural	44.15	17.98	32.89	4.97
	Urban	46.91	19.19	29.76	4.13
	Near Urban	45.70	18.50	30.47	5.32
Region					
	North	47.11	18.62	29.18	5.08
	South	47.45	18.70	29.63	4.21
	Rocky Mtns & G. Plains	40.28	17.44	37.77	4.52
	Pacific	46.42	21.35	28.80	3.42

Table 37. For your state or region, please state whether you are concerned, slightly concerned, or not concerned about the following: Reduced scenic quality and recreation opportunities from prescribed fire. (Fire Q12D.)

		Concerned	Slightly concerned	Not concerned	Don't know/ Refused
		(Percent)			
General public (Census weighted)		42.15	16.84	33.93	7.07
Gender					
	Male	32.28	17.19	46.02	4.50
	Female	39.70	17.46	35.74	7.11
Race					
	White	34.47	17.38	42.55	5.60
	Black	57.35	15.42	19.28	7.95
	Hispanic	48.07	17.80	28.49	5.64
Education					
	No college	45.23	15.59	29.96	9.22
	College	34.70	18.05	42.82	4.43
	Prof.	24.60	18.52	52.99	3.89
Household Income					
	< $40,000	43.12	15.12	32.36	9.39
	$40,000 - $80,000	35.85	18.80	41.14	4.22
	> $80,000	27.15	17.92	52.01	2.92
Age					
	<35	39.55	21.24	35.92	3.28
	35-55	32.44	17.61	45.83	4.11
	>55	39.11	13.18	36.63	11.09
Population density					
	Rural	32.89	17.84	41.52	7.75
	Urban	36.93	18.05	40.03	4.99
	Near Urban	36.77	15.23	40.15	7.84
Region					
	North	37.87	17.50	38.33	6.31
	South	38.10	17.96	37.82	6.11
	Rocky Mtns & G. Plains	31.87	14.30	48.31	5.52
	Pacific	32.53	17.82	44.61	5.03

Table 38. For your state or region, please state whether you are concerned, slightly concerned, or not concerned about the following: Taxpayer's cost will be considered when developing fire management programs. (Fire Q12E.)

		Concerned	Slightly concerned	Not concerned	Don't know/ Refused
		(Percent)			
General public (Census weighted)		53.61	17.28	23.44	5.67
Gender					
	Male	51.12	18.01	27.45	3.41
	Female	49.64	21.11	23.49	5.75
Race					
	White	48.03	21.05	26.20	4.72
	Black	72.77	6.99	16.14	4.10
	Hispanic	61.72	16.32	17.80	4.15
Education					
	No college	56.26	15.82	21.01	6.92
	College	48.95	21.16	26.33	3.55
	Prof.	42.55	23.17	30.58	3.70
Household Income					
	< $40,000	55.02	17.79	20.88	6.31
	$40,000 - $80,000	50.20	20.47	25.28	4.05
	> $80,000	42.92	21.94	32.85	2.29
Age					
	<35	47.21	21.99	27.61	3.18
	35-55	48.10	21.24	27.31	3.35
	>55	56.14	15.56	20.12	8.18
Population density					
	Rural	49.27	21.05	24.56	5.12
	Urban	49.62	20.42	25.76	4.19
	Near Urban	52.35	17.47	24.11	6.07
Region					
	North	49.13	20.11	26.15	4.62
	South	52.92	18.80	23.47	4.81
	Rocky Mtns & G. Plains	48.31	19.57	27.10	5.02
	Pacific	49.55	20.85	24.77	4.83

Table 39. For your state or region, please state whether you are concerned, slightly concerned, or not concerned about the following: Long-term forest health will be considered when developing fire management programs. (Fire Q12F.)

		Concerned	Slightly concerned	Not concerned	Don't know/ Refused
		(Percent)			
General public (Census weighted)		64.22	13.62	16.38	5.77
Gender					
	Male	64.73	14.04	17.59	3.65
	Female	64.44	14.47	15.75	5.34
Race					
	White	63.47	14.89	17.17	4.46
	Black	75.18	10.12	10.12	4.58
	Hispanic	68.84	12.46	13.95	4.75
Education					
	No college	62.18	14.69	15.95	7.19
	College	65.60	14.66	16.54	3.20
	Prof.	66.76	12.06	17.66	3.51
Household Income					
	< $40,000	65.09	14.48	13.98	6.45
	$40,000 - $80,000	64.88	14.35	16.96	3.81
	> $80,000	63.61	14.03	19.79	2.57
Age					
	<35	61.24	18.21	17.61	2.94
	35-55	65.64	13.67	17.54	3.14
	>55	66.37	11.27	14.08	8.28
Population density					
	Rural	65.50	14.18	16.67	3.65
	Urban	64.10	14.55	16.82	4.53
	Near Urban	65.52	13.52	15.69	5.27
Region					
	North	63.06	14.46	17.37	5.12
	South	66.34	14.95	14.68	4.03
	Rocky Mtns & G. Plains	61.98	12.80	20.45	4.77
	Pacific	67.57	13.29	14.80	4.33

Appendix D: Regression Equations

Experience Equations

Table D1.

Logit Equation: Q1. Have you seen, heard, or read about forest fires in the past 12 months? (Yes/No)

Characteristics in numerator of Prob[Y = 1]

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Constant	-1.403585469	.55716220	-2.519	.0118	
AGE	.1755266342E-01	.18405420E-02	9.537	.0000	42.912713
FEMALE	-.3386348989	.65745243E-01	-5.151	.0000	.52111992
NONWH2	-.3357128514	.87662870E-01	-3.830	.0001	.14369666
NONWH3	-.2024537212	.10703162	-1.892	.0586	.11522721
EDUC_YR	.8132787693E-01	.15667793E-01	5.191	.0000	13.292607
LNINC1	.1708234751	.53671196E-01	3.183	.0015	10.619954
NONUS	-.1143282123	.14580549	-.784	.4330	.48370764E-01
NONRU2	-.6467046323	.15668022	-4.128	.0000	.78097920
NONRU3	-.2617263020	.17331079	-1.510	.1310	.15940600
REGION2	.2717620750E-01	.71505900E-01	.380	.7039	.32392737
REGION3	.6694394466	.12788514	5.235	.0000	.10778449
REGION4	1.001283110	.11871730	8.434	.0000	.13892458
UNEMPLOY	.2002628502	.71080865E-01	2.817	.0048	.38897074
NEWDATA	-.6502418623	.65710502E-01	-9.896	.0000	.47582509

Number of observations	6288
Log likelihood function	-3040.133
Restricted log likelihood	-3276.562
Chi-squared	472.8578
Degrees of freedom	14
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	Predicted 1	Total
0	21	1120	1141
1	19	5128	5147
Total	40	6248	6288

Table D2.

Logit Equation: Q2. Have you ever witnessed a forest fire? (Yes/No)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Characteristics in numerator of Prob[Y = 1]					
Constant	-3.242371963	.51786760	-6.261	.0000	
AGE	.1127051888E-01	.17014569E-02	6.624	.0000	42.919917
FEMALE	-.7145349445	.60114790E-01	-11.886	.0000	.52169154
NONWH2	-.7990600712	.10201106	-7.833	.0000	.14322964
NONWH3	-.7863084866	.10536069	-7.463	.0000	.11438316
EDUC_YR	.3829271346E-01	.13845808E-01	2.766	.0057	13.292687
LNINC1	.1901326985	.50594109E-01	3.758	.0002	10.618852
NONUS	.4819831823	.14030891	3.435	.0006	.48487072E-01
NONRU2	-.5791095748	.11879191	-4.875	.0000	.78106198
NONRU3	-.3637682761	.13264245	-2.742	.0061	.15944260
REGION2	.6449603846	.71043114E-01	9.078	.0000	.32399643
REGION3	1.251457075	.94986033E-01	13.175	.0000	.10711548
REGION4	1.617101558	.88997353E-01	18.170	.0000	.13833311
UNEMPLOY	-.1865757724	.67119961E-01	-2.780	.0054	.38957723
NEWDATA	-.2988765768	.59838819E-01	-4.995	.0000	.47739453

Number of observations	6338
Log likelihood function	-3473.541
Restricted log likelihood	-3906.971
Chi-squared	866.8610
Degrees of freedom	14
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	Predicted 1	Total
0	3618	484	4102
1	1392	844	2236
Total	5010	1328	6338

Table D3.

Logit Equation: Q3. Have you ever seen a forest or rangeland soon after a fire burned through it? (Yes/No)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Characteristics in numerator of Prob[Y = 1]					
Constant	-3.184731375	.48164069	-6.612	.0000	
AGE	.6767852995E-02	.15516620E-02	4.362	.0000	42.943127
FEMALE	-.4708624839	.56290712E-01	-8.365	.0000	.52192730
NONWH2	-.7295219408	.80280236E-01	-9.087	.0000	.14248452
NONWH3	-.6343202769	.92706496E-01	-6.842	.0000	.11437109
EDUC_YR	.7097095602E-01	.13300531E-01	5.336	.0000	13.293644
LNINC1	.2634922631	.46720861E-01	5.640	.0000	10.619430
NONUS	-.3360717465	.13151186	-2.555	.0106	.48156988E-01
NONRU2	-.4102327727	.12292916	-3.337	.0008	.78128788
NONRU3	-.2476437087	.13602565	-1.821	.0687	.15922297
REGION2	.5457230683	.62995160E-01	8.663	.0000	.32423108
REGION3	1.345177697	.10611642	12.676	.0000	.10711543
REGION4	1.429708581	.97105226E-01	14.723	.0000	.13854923
UNEMPLOY	-.1352159452	.61233987E-01	-2.208	.0272	.38939880
NEWDATA	.3832652712E-02	.55924055E-01	.069	.9454	.47773960

Number of observations	6344
Log likelihood function	-3840.061
Restricted log likelihood	-4241.452
Chi-squared	802.7824
Degrees of freedom	14
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	Predicted 1	Total
0	561	1549	2110
1	384	3850	4234
Total	945	5399	6344

Table D4.

Logit Equation: Q4. Have you ever altered your recreation or vacation plans because of a forest fire? (Yes/No)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Characteristics in numerator of Prob[Y = 1]				
Constant	-5.497773687	.67894053	-8.098	.0000	
AGE	-.9907667154E-03	.22804436E-02	-.434	.6640	42.925246
FEMALE	-.1380169099	.77105144E-01	-1.790	.0735	.52180301
NONWH2	-.8365403872	.15803242	-5.293	.0000	.14304737
NONWH3	-.1801707129	.12269356	-1.468	.1420	.11423760
EDUC_YR	.1369439946	.18310500E-01	7.479	.0000	13.294106
LNINC1	.1755223422	.65468515E-01	2.681	.0073	10.618917
NONUS	.1373961458E-01	.18193865	.076	.9398	.48425370E-01
NONRU2	-.2493091987	.15949688	-1.563	.1180	.78118933
NONRU3	-.1809011683E-01	.17673035	-.102	.9185	.15951648
REGION2	.2896986662	.10050167	2.883	.0039	.32388067
REGION3	1.462065166	.11125885	13.141	.0000	.10719015
REGION4	1.273863680	.10583222	12.037	.0000	.13858497
UNEMPLOY	-.1925945208	.88088112E-01	-2.186	.0288	.38971130
NEWDATA	-.2803895504	.77696189E-01	-3.609	.0003	.47747473

Number of observations	6348
Log likelihood function	-2331.291
Restricted log likelihood	-2572.066
Chi-squared	481.5496
Degrees of freedom	14
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	Predicted 1	Total
0	5236	34	5270
1	1046	32	1078
Total	6282	66	6348

Table D5.

Logit Equation: Q5. Has forest fire smoke ever affected your visibility while traveling by car or by air? (Yes/No)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Characteristics in numerator of Prob[Y = 1]				
Constant	-4.362325495	.51043568	-8.546	.0000	
AGE	.1027535265E-01	.16630610E-02	6.179	.0000	42.914964
FEMALE	-.3744075761	.58419631E-01	-6.409	.0000	.52233296
NONWH2	-.3631591196	.91959288E-01	-3.949	.0001	.14268017
NONWH3	-.6063070410	.10192900	-5.948	.0000	.11419033
EDUC_YR	.4942653847E-01	.13623834E-01	3.628	.0003	13.292661
LNINC1	.2486434429	.49639503E-01	5.009	.0000	10.619707
NONUS	.8424404016E-01	.14165119	.595	.5520	.48538822E-01
NONRU2	-.4072949919	.11773276	-3.459	.0005	.78094187
NONRU3	-.3236749004	.13171932	-2.457	.0140	.15976379
REGION2	.9190372664	.69359430E-01	13.250	.0000	.32367337
REGION3	1.270223215	.94150381E-01	13.491	.0000	.10744128
REGION4	1.406529248	.87625837E-01	16.052	.0000	.13803614
UNEMPLOY	-.1836716380	.65551759E-01	-2.802	.0051	.38985663
NEWDATA	-.2833867707	.58417298E-01	-4.851	.0000	.47811943

Number of observations	6335
Log likelihood function	-3606.121
Restricted log likelihood	-3932.110
Chi-squared	651.9795
Degrees of freedom	14
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted		
Actual	0	1	Total
0	3541	543	4084
1	1532	719	2251
Total	5073	1262	6335

Table D6.

Ordered Logit Equation: Q6. How likely do you think a forest fire could occur within 10 miles of your home? (Very Likely, 0/Somewhat Likely, 1/Very Unlikely, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Index function for probability					
Constant	1.050317386	.31972093	3.285	.0010	
AGE	.9046305829E-03	.10465011E-02	.864	.3873	42.927086
FEMALE	-.8836362499E-01	.39984468E-01	-2.210	.0271	.52092047
NONWH2	.5917283865	.52040193E-01	11.371	.0000	.14186019
NONWH3	.5027783699	.55197097E-01	9.109	.0000	.11396617
EDUC_YR	-.1549005503E-01	.83555467E-02	-1.854	.0638	13.297327
LNINC1	-.3412851795E-02	.28918800E-01	-.118	.9061	10.622099
NONUS	.3262770034	.86677543E-01	3.764	.0002	.48145474E-01
NONRU2	.7832599127	.99609460E-01	7.863	.0000	.78115111
NONRU3	.1183461531	.10884578	1.087	.2769	.15962531
REGION2	-.4801119257	.47516267E-01	-10.104	.0000	.32292050
REGION3	-.3501361927	.62479258E-01	-5.604	.0000	.10760201
REGION4	-.8502189045	.61145776E-01	-13.905	.0000	.13926538
UNEMPLOY	.1197320895	.43080016E-01	2.779	.0054	.38930273
NEWDATA	.2826934740	.42481545E-01	6.655	.0000	.47740944
Threshold parameters for index					
Mu(1)	.9985630472	.21477887E-01	46.493	.0000	

Number of observations	6325
Log likelihood function	-5753.422
Restricted log likelihood	-6246.514
Chi-squared	986.1831
Degrees of freedom	14
Significance level	.0000000

Cell frequencies for outcomes

Y	Count	Freq	Y	Count	Freq	Y	Count	Freq
0	1448	.228	1	1316	.208	2	3560	.563

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	1	2	Total
0	207	0	1241	1448
1	95	0	1221	1316
2	149	0	3412	3561
Total	451	0	5874	6325

Table D7.

Ordered Logit Equation: Q7. How concerned are you that your home could be damaged by forest fire? (Concerned, 0/Slightly Concerned, 1/Not Concerned, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Index function for probability					
Constant	1.149804951	.38238645	3.007	.0026	
AGE	.2748573757E-02	.12855356E-02	2.138	.0325	42.919180
FEMALE	-.3592342602	.48867394E-01	-7.351	.0000	.52127292
NONWH2	.5104255765E-01	.60583474E-01	.843	.3995	.14274756
NONWH3	.2110939802	.69322092E-01	3.045	.0023	.11358776
EDUC_YR	.4925311868E-01	.10447317E-01	4.714	.0000	13.295051
LNINC1	.2030806545E-01	.33351278E-01	.609	.5426	10.621485
NONUS	-.3214348356E-02	.10731936	-.030	.9761	.47985613E-01
NONRU2	.8073292330	.11410585	7.075	.0000	.78076619
NONRU3	.9577311991E-01	.12368676	.774	.4387	.15975396
REGION2	-.6238907116	.56252876E-01	-11.091	.0000	.32375676
REGION3	-.1583020286	.82799522E-01	-1.912	.0559	.10736051
REGION4	-.6509227569	.82043112E-01	-7.934	.0000	.13880297
UNEMPLOY	-.6661117475E-01	.52418464E-01	-1.271	.2038	.38958089
NEWDATA	.4127782626	.52542707E-01	7.856	.0000	.47741822
Threshold parameters for index					
Mu(1)	.9954611192	.28759077E-01	34.614	.0000	

Number of observations	6344
Log likelihood function	-3845.274
Restricted log likelihood	-4135.771
Chi-squared	580.9939
Degrees of freedom	14
Significance level	.0000000

Cell frequencies for outcomes

Y	Count	Freq	Y	Count	Freq	Y	Count	Freq
0	536	.084	1	784	.123	2	5024	.791

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	1	2	Total
0	0	0	536	536
1	0	0	784	784
2	0	0	5024	5024
Total	0	0	6344	6344

Table D8.

Logit Equation: Q8A. Do you keep leaves, shrubs, trees and vegetation cleared near buildings? (Yes/No)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Characteristics in numerator of Prob[Y = 1]					
Constant	-1.369544294	.79731929	-1.718	.0859	
AGE	.2342215488E-01	.28921251E-02	8.099	.0000	42.700992
FEMALE	.5033382611E-01	.96928792E-01	.519	.6036	.52585569
NONWH2	.1108027974	.17331727	.639	.5226	.99089451E-01
NONWH3	.8272245051E-01	.17241365	.480	.6314	.91011271E-01
EDUC_YR	-.5695313388E-01	.23536689E-01	-2.420	.0155	13.373728
LNINC1	.1564176295	.77167465E-01	2.027	.0427	10.632953
NONUS	-.8819584464E-01	.27307228	-.323	.7467	.32046993E-01
NONRU2	-.7385566148E-01	.18454210	-.400	.6890	.70770861
NONRU3	.3216340653E-01	.20352786	.158	.8744	.20859159
REGION2	.2614698996	.11367109	2.300	.0214	.36013761
REGION3	-.1015112978	.15990139	-.635	.5255	.10736853
REGION4	.6408821969E-01	.14051004	.456	.6483	.17092480
UNEMPLOY	-.1230756888	.10579388	-1.163	.2447	.37152800
F1NEW	.6265138065E-01	.12409478	.505	.6137	.82244412
F6NEW	.1182537124	.99271266E-01	1.191	.2336	.50842081
F7NEW	1.193657635	.10513330	11.354	.0000	.49717391
NEWDATA	-.6150978150E-01	.96232007E-01	-.639	.5227	.45126226

Number of observations	2723
Log likelihood function	-1391.840
Restricted log likelihood	-1525.470
Chi-squared	267.2600
Degrees of freedom	17
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted		
Actual	0	1	Total
0	40	616	656
1	45	2022	2067
Total	85	2638	2723

Table D9.

Logit Equation: Q8B. Do you spray herbicides to control undergrowth? (Yes/No)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Characteristics in numerator of Prob[Y = 1]					
Constant	-4.202212096	.77797788	-5.401	.0000	
AGE	.3034576077E-02	.26741221E-02	1.135	.2565	42.733147
FEMALE	.7827337003E-01	.91904622E-01	.852	.3944	.52453035
NONWH2	.2659445333	.15088654	1.763	.0780	.97060238E-01
NONWH3	.4254734746E-01	.16181647	.263	.7926	.91008427E-01
EDUC_YR	-.6081762677E-01	.22002189E-01	-2.764	.0057	13.379089
LNINC1	.2619343013	.74314091E-01	3.525	.0004	10.634502
NONUS	-.7682850934	.30265180	-2.539	.0111	.31190164E-01
NONRU2	.2336212054	.16835770	1.388	.1652	.70761155
NONRU3	.3098458222	.18327685	1.691	.0909	.20932312
REGION2	.6799062370	.10608158	6.409	.0000	.36192948
REGION3	.2696596472	.16138572	1.671	.0947	.10790860
REGION4	.3053954505	.13827613	2.209	.0272	.16941304
UNEMPLOY	-.1309321990	.10049747	-1.303	.1926	.37023192
F1NEW	.3335781036	.12490893	2.671	.0076	.82322716
F6NEW	.7706681779E-01	.93405742E-01	.825	.4093	.50760077
F7NEW	.4752829125	.94497270E-01	5.030	.0000	.49417987
NEWDATA	-.3920699901E-01	.90523751E-01	-.433	.6649	.45260676

Number of observations	2703
Log likelihood function	-1533.303
Restricted log likelihood	-1592.668
Chi-squared	118.7303
Degrees of freedom	17
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	Predicted 1	Total
0	1963	13	1976
1	719	8	727
Total	2682	21	2703

Table D10.

Logit Equation: Q8C.Do you purchase extra property insurance? (Yes/No)

Characteristics in numerator of Prob[Y = 1]

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Constant	-7.700204362	.82047837	-9.385	.0000	
AGE	.2243812038E-01	.28360991E-02	7.912	.0000	43.311272
FEMALE	.3048854017	.98530929E-01	3.094	.0020	.52219684
NONWH2	-.4755390856	.15259900	-3.116	.0018	.99032253E-01
NONWH3	.2452124663	.17963421	1.365	.1722	.90646877E-01
EDUC_YR	-.2977234879E-01	.23488887E-01	-1.268	.2050	13.375435
LNINC1	.7919168736	.78959834E-01	10.029	.0000	10.643330
NONUS	.1415183421E-01	.27310246	.052	.9587	.34384904E-01
NONRU2	-.3189047806	.18562117	-1.718	.0858	.70442210
NONRU3	-.2859615168	.20087240	-1.424	.1546	.21141659
REGION2	.1717119466	.11444237	1.500	.1335	.35938538
REGION3	-.3585712724	.16064892	-2.232	.0256	.10830185
REGION4	-.1601155451	.14250661	-1.124	.2612	.17219261
UNEMPLOY	-.2361338337	.10615982	-2.224	.0261	.36739651
F1NEW	.8126878617E-01	.12353272	.658	.5106	.82572394
F6NEW	.9129065510E-01	.99921314E-01	.914	.3609	.51565925
F7NEW	.5476925498	.10271287	5.332	.0000	.49699763
NEWDATA	-.5463771928	.97280272E-01	-5.617	.0000	.44984708

Number of observations	2665
Log likelihood function	-1376.525
Restricted log likelihood	-1515.817
Chi-squared	278.5845
Degrees of freedom	17
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	Predicted 1	Total
0	78	539	617
1	42	2006	2048
Total	120	2545	2665

Table D11.

Logit Equation: Q8D. Do you keep extra hoses and firefighting equipment around? (Yes/No)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Characteristics in numerator of Prob[Y = 1]					
Constant	.3511287836	.70495059	.498	.6184	
AGE	.7474013805E-02	.24812314E-02	3.012	.0026	42.751861
FEMALE	.3727038003	.84654978E-01	4.403	.0000	.52733570
NONWH2	.2523930741	.15093065	1.672	.0945	.97669063E-01
NONWH3	-.2140922255	.15087291	-1.419	.1559	.92042932E-01
EDUC_YR	-.8505374682E-01	.20278136E-01	-4.194	.0000	13.358610
LNINC1	.3442089021E-01	.68057877E-01	.506	.6130	10.630369
NONUS	-.3885524426	.22520545	-1.725	.0845	.35191750E-01
NONRU2	-.4481591371	.16493536	-2.717	.0066	.70457849
NONRU3	-.4247199939	.17956943	-2.365	.0180	.21196941
REGION2	.2183607127	.98359401E-01	2.220	.0264	.36096477
REGION3	.1265943071	.14499747	.873	.3826	.11073713
REGION4	.6047565432E-01	.12453717	.486	.6272	.16983076
UNEMPLOY	.9492914585E-01	.92954751E-01	1.021	.3071	.36986130
F1NEW	.4182761948	.10917594	3.831	.0001	.82316148
F6NEW	.4743086816E-01	.87008421E-01	.545	.5857	.51046501
F7NEW	.7365846039	.87600361E-01	8.408	.0000	.49677403
NEWDATA	-.9989680266E-01	.84224481E-01	-1.186	.2356	.45147005

Number of observations	2729
Log likelihood function	-1710.136
Restricted log likelihood	-1818.885
Chi-squared	217.4966
Degrees of freedom	17
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	Predicted 1	Total
0	389	674	1063
1	278	1388	1666
Total	667	2062	2729

Table D12.

Logit Equation: Q8E. Do you periodically burn undergrowth around your home? (Yes/No)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Characteristics in numerator of Prob[Y = 1]				
Constant	-1.844716740	.93169170	-1.980	.0477	
AGE	-.8598672646E-02	.32702016E-02	-2.629	.0086	42.711079
FEMALE	-.4288353910E-01	.11233348	-.382	.7026	.52750388
NONWH2	-.4848668740E-01	.18964909	-.256	.7982	.97657828E-01
NONWH3	-.3199673044	.21025760	-1.522	.1281	.93595005E-01
EDUC_YR	-.4332171055E-01	.26676009E-01	-1.624	.1044	13.358271
LNINC1	.9233845448E-01	.89632989E-01	1.030	.3029	10.633478
NONUS	-.3121084224E-01	.30677747	-.102	.9190	.35187702E-01
NONRU2	-.8853948174	.16983235	-5.213	.0000	.70588388
NONRU3	-.4081313844	.18473267	-2.209	.0272	.21147508
REGION2	.2759979010	.13038631	2.117	.0343	.36032100
REGION3	.2685215847	.18660414	1.439	.1502	.11063368
REGION4	.3508495180E-01	.17293983	.203	.8392	.17012414
UNEMPLOY	-.8710241510E-01	.12111480	-.719	.4720	.36958335
F1NEW	.1816191205	.15422998	1.178	.2390	.82448926
F6NEW	.3041129758	.11587201	2.625	.0087	.50848638
F7NEW	.6186232144	.11810134	5.238	.0000	.49752037
NEWDATA	.1657528007	.11066563	1.498	.1342	.45105291

```
Number of observations            2723
Log likelihood function      -1126.149
Restricted log likelihood    -1183.951
Chi-squared                   115.6049
Degrees of freedom                  17
Significance level            .0000000
```

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted		
Actual	0	1	Total
0	2268	0	2268
1	455	0	455
Total	2723	0	2723

Knowledge Equations

Table D13.

Logit Equation: Q9. Do you know the difference between wildfire and prescribed fire (controlled burn)? (Yes/No)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Characteristics in numerator of Prob[Y = 1]				
Constant	-3.845023847	.56738165	-6.777	.0000	
AGE	.2833762975E-01	.18668441E-02	15.179	.0000	42.959375
FEMALE	-.7331566928	.69636547E-01	-10.528	.0000	.52024440
NONWH2	-1.072469322	.87130658E-01	-12.309	.0000	.14344296
NONWH3	-1.074503707	.10245007	-10.488	.0000	.11352159
EDUC_YR	.1532228867	.16663229E-01	9.195	.0000	13.301200
LNINC1	.2686284788	.54246976E-01	4.952	.0000	10.620846
NONUS	-.4204804803	.14574576	-2.885	.0039	.48033917E-01
NONRU2	-.3156764611	.15194379	-2.078	.0377	.78043406
NONRU3	.1881920433E-01	.16945893	.111	.9116	.15970610
REGION2	.4533681254	.76061970E-01	5.961	.0000	.32465865
REGION3	1.576668966	.15382021	10.250	.0000	.10733718
REGION4	.9848439863	.11437722	8.610	.0000	.13902197
UNEMPLOY	-.5445962362	.71433139E-01	-7.624	.0000	.38894244
NEWDATA	-.1586876035	.67869164E-01	-2.338	.0194	.47768512

Number of observations	6317
Log likelihood function	-2826.922
Restricted log likelihood	-3425.508
Chi-squared	1197.173
Degrees of freedom	14
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted		
Actual	0	1	Total
0	162	859	1021
1	97	5199	5296
Total	259	6058	6317

Table D14.

Logit Equation: Q10A. Most wildfires occur naturally. (True, 1/False, 0/ Uncertain, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Characteristics in numerator of Prob[Y = 1]				
Constant	-.5205390498	.48209547	-1.080	.2803	
AGE	.2348417082E-02	.16139304E-02	1.455	.1456	42.956065
FEMALE	-.3791391068	.57002634E-01	-6.651	.0000	.52025656
NONWH2	.5659059222E-01	.85092986E-01	.665	.5060	.14346791
NONWH3	-.1177005968	.96227403E-01	-1.223	.2213	.11354134
EDUC_YR	.7167010947E-01	.13329027E-01	5.377	.0000	13.301235
LNINC1	-.3953829737E-01	.46842152E-01	-.844	.3986	10.620869
NONUS	.1764210063	.13675639	1.290	.1970	.48042272E-01
NONRU2	-.5059882289E-02	.11973658	-.042	.9663	.78056980
NONRU3	-.6438536010E-01	.13408137	-.480	.6311	.15963828
REGION2	-.3309915973E-01	.65512754E-01	-.505	.6134	.32471512
REGION3	.4768175020	.95749704E-01	4.980	.0000	.10735585
REGION4	.1066651295	.86268937E-01	1.236	.2163	.13896781
UNEMPLOY	.1580631185	.62610335E-01	2.525	.0116	.38891449
F9	-.2923781996	.73026009E-01	-4.004	.0001	.76746902
INTRO	-.1403732092	.55340982E-01	-2.537	.0112	.49081997
NEWDATA	.2341364330E-01	.56234019E-01	.416	.6771	.47776820
	Characteristics in numerator of Prob[Y = 2]				
Constant	-.9575225860	.67896955	-1.410	.1585	
AGE	.6316828502E-02	.21819990E-02	2.895	.0038	42.956065
FEMALE	-.4999163366E-01	.80366646E-01	-.622	.5339	.52025656
NONWH2	.1644129156	.11404087	1.442	.1494	.14346791
NONWH3	.1252541271E-01	.13171929	.095	.9242	.11354134
EDUC_YR	-.3493845335E-01	.18690687E-01	-1.869	.0616	13.301235
LNINC1	.9673941846E-03	.66350983E-01	.015	.9884	10.620869
NONUS	.4775938139	.17060873	2.799	.0051	.48042272E-01
NONRU2	-.7927590421E-01	.16360929	-.485	.6280	.78056980
NONRU3	.1454553273	.17875062	.814	.4158	.15963828
REGION2	.8646843585E-01	.90252319E-01	.958	.3380	.32471512
REGION3	.3228899068	.13797141	2.340	.0193	.10735585
REGION4	.6381091784E-01	.12582782	.507	.6121	.13896781
UNEMPLOY	.2373950026	.85901870E-01	2.764	.0057	.38891449
F9	-.4926580160	.95795105E-01	-5.143	.0000	.76746902
INTRO	.7133450601E-01	.77452519E-01	.921	.3570	.49081997
NEWDATA	.1063724530	.78697085E-01	1.352	.1765	.47776820

Number of observations	6315
Log likelihood function	-6164.548
Restricted log likelihood	-6271.201
Chi-squared	213.3064
Degrees of freedom	32
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	1	2	Total
0	2556	492	0	3048
1	1734	719	0	2453
2	644	169	1	814
Total	4934	1380	1	6315

Table D15.

Logit Equation: Q10B. Wildfires are destructive to long-term forest or rangeland health. (True, 1/False, 2/ Uncertain, 0)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Characteristics in numerator of Prob[Y = 1]				
Constant	2.465147673	.66356470	3.715	.0002	
AGE	-.8580137830E-02	.21130291E-02	-4.061	.0000	42.951955
FEMALE	-.1147687805E-01	.78063575E-01	-.147	.8831	.52022514
NONWH2	-.2083471350	.10733123	-1.941	.0522	.14336751
NONWH3	-.5714816796	.11772989	-4.854	.0000	.11357137
EDUC_YR	.2614827096E-01	.18379624E-01	1.423	.1548	13.300036
LNINC1	-.5543369113E-01	.64711171E-01	-.857	.3916	10.620803
NONUS	-.4459924261	.15736305	-2.834	.0046	.47959489E-01
NONRU2	-.5525619057E-01	.16095335	-.343	.7314	.78056869
NONRU3	-.2674899798E-01	.17781524	-.150	.8804	.15968051
REGION2	.4102404339E-01	.87090150E-01	.471	.6376	.32466267
REGION3	.6683677561E-01	.13978845	.478	.6326	.10738425
REGION4	.1249248250	.12343380	1.012	.3115	.13894764
UNEMPLOY	-.1455904528	.82667942E-01	-1.761	.0782	.38880977
F9	-.8616598827E-01	.91171846E-01	-.945	.3446	.76740751
INTRO	-.5903577798E-01	.75151678E-01	-.786	.4321	.49077166
NEWDATA	-.3213205553	.76794244E-01	-4.184	.0000	.47789459
	Characteristics in numerator of Prob[Y = 2]				
Constant	-1.951501877	.75683650	-2.578	.0099	
AGE	-.1016162475E-01	.24728469E-02	-4.109	.0000	42.951955
FEMALE	-.6318785648	.87455429E-01	-7.225	.0000	.52022514
NONWH2	-.7043073268	.13298568	-5.296	.0000	.14336751
NONWH3	-1.102430314	.14395171	-7.658	.0000	.11357137
EDUC_YR	.1709330992	.20620575E-01	8.289	.0000	13.300036
LNINC1	.6984476041E-01	.73224010E-01	.954	.3402	10.620803
NONUS	-.3016699234	.19022188	-1.586	.1128	.47959489E-01
NONRU2	.1196481314	.18489653	.647	.5176	.78056869
NONRU3	-.2754480762E-01	.20562435	-.134	.8934	.15968051
REGION2	-.1025717701	.99960274E-01	-1.026	.3048	.32466267
REGION3	.3727092727	.14937661	2.495	.0126	.10738425
REGION4	.2808669611	.13417093	2.093	.0363	.13894764
UNEMPLOY	-.4122280701	.95539220E-01	-4.315	.0000	.38880977
F9	.9867490277	.11996044	8.226	.0000	.76740751
INTRO	-.6725832249E-01	.84678531E-01	-.794	.4270	.49077166
NEWDATA	-.3424388926	.86457859E-01	-3.961	.0001	.47789459

Number of observations	6312
Log likelihood function	-5626.553
Restricted log likelihood	-6070.989
Chi-squared	888.8713
Degrees of freedom	32
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted			
Actual	0	1	2	Total
0	0	633	165	798
1	1	2742	529	3272
2	0	1305	937	2242
Total	1	4680	1631	6312

Table D16.

Logit Equation: Q10C. Wildfire is one of the leading environmental problems. (True, 1/False, 2/ Uncertain, 0)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Characteristics in numerator of Prob[Y = 1]				
Constant	2.878963959	.64235208	4.482	.0000	
AGE	.1194273961E-01	.20864303E-02	5.724	.0000	42.948177
FEMALE	-.1136670007	.75860493E-01	-1.498	.1340	.52043819
NONWH2	.2808425277	.11072747	2.536	.0112	.14349639
NONWH3	.2907607298	.12608952	2.306	.0211	.11356388
EDUC_YR	-.3471438932E-01	.18016276E-01	-1.927	.0540	13.300657
LNINC1	-.1506266604	.62334938E-01	-2.416	.0157	10.620693
NONUS	-.3330203373	.15735055	-2.116	.0343	.48051810E-01
NONRU2	-.3609672840E-01	.15763116	-.229	.8189	.78044789
NONRU3	-.1282854436	.17523210	-.732	.4641	.15966998
REGION2	.5155498378E-01	.84941896E-01	.607	.5439	.32477958
REGION3	-.2500856540E-01	.13319377	-.188	.8511	.10737716
REGION4	-.2980909188E-01	.11524373	-.259	.7959	.13879687
UNEMPLOY	-.8547610172E-02	.79628767E-01	-.107	.9145	.38871482
F9	.4440916507E-01	.88736340E-01	.500	.6167	.76742285
INTRO	.1895408454E-01	.72648680E-01	.261	.7942	.49078189
NEWDATA	-.5433304864	.74027872E-01	-7.340	.0000	.47758618
	Characteristics in numerator of Prob[Y = 2]				
Constant	-1.342818600	.68962538	-1.947	.0515	
AGE	.1181691407E-02	.22713207E-02	.520	.6029	42.948177
FEMALE	-.7579284457	.79372073E-01	-9.549	.0000	.52043819
NONWH2	.1273590166E-01	.12247600	.104	.9172	.14349639
NONWH3	.2017464639E-01	.13654345	.148	.8825	.11356388
EDUC_YR	.8834029050E-01	.18962552E-01	4.659	.0000	13.300657
LNINC1	.7502768456E-01	.66731811E-01	1.124	.2609	10.620693
NONUS	-.5947515756	.17956885	-3.312	.0009	.48051810E-01
NONRU2	.1858955494E-02	.16903214	.011	.9912	.78044789
NONRU3	.5537127396E-01	.18720639	.296	.7674	.15966998
REGION2	.6768887789E-01	.90776294E-01	.746	.4559	.32477958
REGION3	.2693761225	.13611407	1.979	.0478	.10737716
REGION4	.1704937178	.11871097	1.436	.1509	.13879687
UNEMPLOY	-.1963656455	.85793265E-01	-2.289	.0221	.38871482
F9	.6500866903	.10101088	6.436	.0000	.76742285
INTRO	.1767493886	.76745432E-01	2.303	.0213	.49078189
NEWDATA	-.3237799175	.78324677E-01	-4.134	.0000	.47758618

```
Number of observations              6314
Log likelihood function        -6050.748
Restricted log likelihood      -6429.489
Chi-squared                     757.4819
Degrees of freedom                    32
Significance level              .0000000
```

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	1	2	Total
0	0	644	413	1057
1	0	1900	847	2747
2	1	1005	1504	2510
Total	1	3549	2764	6314

Table D17.

Logit Equation: Q10D. Prescribed fires and wildfires have similar effects. (True, 1/False, 0/ Uncertain, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Characteristics in numerator of Prob[Y = 1]				
Constant	2.909183552	.49613861	5.864	.0000	
AGE	.2115624339E-02	.16525930E-02	1.280	.2005	42.938504
FEMALE	-.1542769026	.57856708E-01	-2.667	.0077	.52043276
NONWH2	.2591884054	.88204503E-01	2.938	.0033	.14358923
NONWH3	.2272526860	.97946360E-01	2.320	.0203	.11363735
EDUC_YR	-.2922116867E-01	.13517432E-01	-2.162	.0306	13.300402
LNINC1	-.1795672061	.48014251E-01	-3.740	.0002	10.621046
NONUS	.4091967402E-02	.14386118	.028	.9773	.48082898E-01
NONRU2	-.2872034252	.12326837	-2.330	.0198	.78031918
NONRU3	-.2331558101	.13739507	-1.697	.0897	.15975994
REGION2	-.1887072313E-01	.66567269E-01	-.283	.7768	.32471928
REGION3	.4453836272E-01	.96602246E-01	.461	.6448	.10735704
REGION4	-.1978332511	.87663426E-01	-2.257	.0240	.13902228
UNEMPLOY	-.7992596572E-01	.64081323E-01	-1.247	.2123	.38900855
F9	-.2495137902	.75400509E-01	-3.309	.0009	.76740427
INTRO	-.7699838933E-01	.56261786E-01	-1.369	.1711	.49095613
NEWDATA	.8244164812E-01	.57328444E-01	1.438	.1504	.47736275
	Characteristics in numerator of Prob[Y = 2]				
Constant	1.215045968	.66011953	1.841	.0657	
AGE	.3062199054E-02	.20981476E-02	1.459	.1444	42.938504
FEMALE	.3640998228	.77481644E-01	4.699	.0000	.52043276
NONWH2	.2832658457	.11202135	2.529	.0114	.14358923
NONWH3	.2708258345	.12761302	2.122	.0338	.11363735
EDUC_YR	-.1125834252	.18156798E-01	-6.201	.0000	13.300402
LNINC1	-.7112674311E-01	.64040305E-01	-1.111	.2667	10.621046
NONUS	.5456908474	.16361384	3.335	.0009	.48082898E-01
NONRU2	-.1384792519	.16389809	-.845	.3982	.78031918
NONRU3	.2179012710E-01	.17996785	.121	.9036	.15975994
REGION2	-.1194582310	.86912660E-01	-1.374	.1693	.32471928
REGION3	-.1693239319	.13489344	-1.255	.2094	.10735704
REGION4	-.2737958541	.11790444	-2.322	.0202	.13902228
UNEMPLOY	.1995210933	.81741875E-01	2.441	.0147	.38900855
F9	-.3710843645	.93347512E-01	-3.975	.0001	.76740427
INTRO	-.2606079203E-01	.74083937E-01	-.352	.7250	.49095613
NEWDATA	.4753749919	.75636150E-01	6.285	.0000	.47736275

Number of observations	6310
Log likelihood function	-6375.572
Restricted log likelihood	-6531.157
Chi-squared	311.1700
Degrees of freedom	32
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted			
Actual	0	1	2	Total
0	1120	1450	7	2577
1	961	1735	10	2706
2	361	653	13	1027
Total	2442	3838	30	6310

Table D18.

Logit Equation: Q10E. Prescribed fires kill too many large trees (True, 1/False, 2/ Uncertain, 0)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Characteristics in numerator of Prob[Y = 1]				
Constant	5.402423786	.65414988	8.259	.0000	
AGE	.5269069079E-02	.20811756E-02	2.532	.0113	42.946719
FEMALE	-.3881838891	.76764237E-01	-5.057	.0000	.52039263
NONWH2	.5036760748	.10677459	4.717	.0000	.14352018
NONWH3	.2358524715	.12148120	1.941	.0522	.11358271
EDUC_YR	-.1520850584	.18679239E-01	-8.142	.0000	13.300819
LNINC1	-.2837996533	.62902506E-01	-4.512	.0000	10.620793
NONUS	.2414224345	.16366486	1.475	.1402	.48059775E-01
NONRU2	-.9826892032E-01	.16376628	-.600	.5485	.78031586
NONRU3	-.1657715690E-02	.18222200	-.009	.9927	.15979208
REGION2	.2769809909	.86777552E-01	3.192	.0014	.32456313
REGION3	.2657351986	.13398155	1.983	.0473	.10739496
REGION4	-.1036803009	.11561364	-.897	.3698	.13909681
UNEMPLOY	.1501583708	.79844248E-01	1.881	.0600	.38901999
F9	.6068802044E-02	.86744772E-01	.070	.9442	.76751613
INTRO	.4966793428E-01	.72975304E-01	.681	.4961	.49082639
NEWDATA	-.4976481843	.74387256E-01	-6.690	.0000	.47740394
	Characteristics in numerator of Prob[Y = 2]				
Constant	.2030851776	.61999549	.328	.7432	
AGE	.6355726532E-02	.20332941E-02	3.126	.0018	42.946719
FEMALE	-.7151106386	.71244828E-01	-10.037	.0000	.52039263
NONWH2	-.2555417927	.11097362	-2.303	.0213	.14352018
NONWH3	-.1803402266	.12039362	-1.498	.1342	.11358271
EDUC_YR	.7313450842E-01	.17242927E-01	4.241	.0000	13.300819
LNINC1	-.5678782573E-01	.59762177E-01	-.950	.3420	10.620793
NONUS	-.2776722529	.17006995	-1.633	.1025	.48059775E-01
NONRU2	-.1573765720	.15452831	-1.018	.3085	.78031586
NONRU3	-.2198872007E-01	.17245992	-.128	.8985	.15979208
REGION2	.4948870223	.82183958E-01	6.022	.0000	.32456313
REGION3	.3795975978	.12419952	3.056	.0022	.10739496
REGION4	.2227643504	.10321946	2.158	.0309	.13909681
UNEMPLOY	-.1398569969	.77311165E-01	-1.809	.0704	.38901999
F9	.7725010581	.89031584E-01	8.677	.0000	.76751613
INTRO	-.7564793859E-01	.68414559E-01	-1.106	.2688	.49082639
NEWDATA	-.4758273034	.69727414E-01	-6.824	.0000	.47740394

Number of observations	6314
Log likelihood function	-6030.740
Restricted log likelihood	-6624.030
Chi-squared	1186.580
Degrees of freedom	32
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted			
Actual	0	1	2	Total
0	109	205	1019	1333
1	81	401	1095	1577
2	56	225	3123	3404
Total	246	831	5237	6314

Table D19.

Logit Equation:Q10F. Prescribed fires reduce the risk of wildfires. (True, 0/False, 1/ Uncertain, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Characteristics in numerator of Prob[Y = 1]				
Constant	2.698626959	.72332015	3.731	.0002	
AGE	-.1796165427E-01	.24715393E-02	-7.267	.0000	42.953805
FEMALE	.3135207930	.88706855E-01	3.534	.0004	.52021029
NONWH2	.6776375296	.11589628	5.847	.0000	.14349673
NONWH3	.5712563739	.12985565	4.399	.0000	.11356415
EDUC_YR	-.1148584682	.21398672E-01	-5.368	.0000	13.300841
LNINC1	-.2155991407	.69573859E-01	-3.099	.0019	10.620951
NONUS	.2896180171	.18768169	1.543	.1228	.48051923E-01
NONRU2	-.2478411721E-01	.18837810	-.132	.8953	.78044907
NONRU3	.4159220366E-01	.20752163	.200	.8411	.15966866
REGION2	-.2134049322	.97728254E-01	-2.184	.0290	.32463462
REGION3	-.4957294648	.16153902	-3.069	.0021	.10728010
REGION4	-.8612882452	.15956906	-5.398	.0000	.13907408
UNEMPLOY	.1450668533	.92580358E-01	1.567	.1171	.38885911
F9	-.4131980766	.10042837	-4.114	.0000	.76755411
INTRO	.4256259543E-01	.85699855E-01	.497	.6194	.49063933
NEWDATA	-.1294763338	.88199792E-01	-1.468	.1421	.47748933
	Characteristics in numerator of Prob[Y = 2]				
Constant	1.112309419	.64889114	1.714	.0865	
AGE	-.1870631555E-02	.20496008E-02	-.913	.3614	42.953805
FEMALE	.6844745534	.79144655E-01	8.648	.0000	.52021029
NONWH2	.6357298923	.10136494	6.272	.0000	.14349673
NONWH3	.5326695169E-01	.13016705	.409	.6824	.11356415
EDUC_YR	-.1696656458	.18511918E-01	-9.165	.0000	13.300841
LNINC1	-.5631480033E-01	.63095974E-01	-.893	.3721	10.620951
NONUS	.7196523449	.15574158	4.621	.0000	.48051923E-01
NONRU2	-.1112896732	.15396408	-.723	.4698	.78044907
NONRU3	-.1033550749	.17159682	-.602	.5470	.15966866
REGION2	-.1785833302	.86331878E-01	-2.069	.0386	.32463462
REGION3	-.3221587155	.14089006	-2.287	.0222	.10728010
REGION4	-.2761551294	.12254321	-2.254	.0242	.13907408
UNEMPLOY	.3035341529	.80593539E-01	3.766	.0002	.38885911
F9	-.6178669274	.86439358E-01	-7.148	.0000	.76755411
INTRO	.1129968328	.74257942E-01	1.522	.1281	.49063933
NEWDATA	.2659180270	.75424262E-01	3.526	.0004	.47748933

Number of observations	6314
Log likelihood function	-4328.110
Restricted log likelihood	-4711.615
Chi-squared	767.0105
Degrees of freedom	32
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted			
Actual	0	1	2	Total
0	5012	0	18	5030
1	498	2	5	505
2	756	1	22	779
Total	6266	3	45	6314

Table D20.

Logit Equation: Q10G. Prescribed fires regularly get out of control. (True, 1/False, 0/ Uncertain, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Characteristics in numerator of Prob[Y = 1]				
Constant	4.970574088	.56405925	8.812	.0000	
AGE	.1020147792E-01	.17969410E-02	5.677	.0000	42.943667
FEMALE	.1191070523	.66001764E-01	1.805	.0711	.52010911
NONWH2	1.031760819	.91279122E-01	11.303	.0000	.14352568
NONWH3	.4847908107	.10608174	4.570	.0000	.11358706
EDUC_YR	-.2448965765	.16220916E-01	-15.098	.0000	13.300065
LNINC1	-.2297624886	.53894116E-01	-4.263	.0000	10.620849
NONUS	.3335779805	.15130819	2.205	.0275	.48061618E-01
NONRU2	-.4757865984	.13023315	-3.653	.0003	.78043132
NONRU3	-.3722785740	.14528056	-2.562	.0104	.15967432
REGION2	-.1250662521	.74749550E-01	-1.673	.0943	.32472893
REGION3	-.1425491492	.11026130	-1.293	.1961	.10730989
REGION4	-.2354031477	.10504466	-2.241	.0250	.13896075
UNEMPLOY	.2594804775	.69869816E-01	3.714	.0002	.38887493
F9	-.4246118309	.79893861E-01	-5.315	.0000	.76750721
INTRO	-.2711665383	.63985014E-01	-4.238	.0000	.49063389
NEWDATA	-.2836626151E-01	.65158138E-01	-.435	.6633	.47759004
	Characteristics in numerator of Prob[Y = 2]				
Constant	2.273906214	.64917077	3.503	.0005	
AGE	-.1189600715E-02	.21572173E-02	-.551	.5813	42.943667
FEMALE	.1850816192	.76071902E-01	2.433	.0150	.52010911
NONWH2	.1310151882	.11928145	1.098	.2720	.14352568
NONWH3	.1025569374	.12570959	.816	.4146	.11358706
EDUC_YR	-.9743878170E-01	.18596466E-01	-5.240	.0000	13.300065
LNINC1	-.1599982262	.62436079E-01	-2.563	.0104	10.620849
NONUS	.4129194494	.16706495	2.472	.0135	.48061618E-01
NONRU2	-.2326023505	.15946901	-1.459	.1447	.78043132
NONRU3	-.2978558543	.17927424	-1.661	.0966	.15967432
REGION2	-.2277281096	.87400373E-01	-2.606	.0092	.32472893
REGION3	-.3749889494	.13825220	-2.712	.0067	.10730989
REGION4	-.6751894702E-01	.11151323	-.605	.5449	.13896075
UNEMPLOY	-.5752636716E-03	.82305314E-01	-.007	.9944	.38887493
F9	-.4936516602	.91842920E-01	-5.375	.0000	.76750721
INTRO	-.2673337812	.73796536E-01	-3.623	.0003	.49063389
NEWDATA	.3499481427	.75037370E-01	4.664	.0000	.47759004

Number of observations	6311
Log likelihood function	-5518.004
Restricted log likelihood	-6034.664
Chi-squared	1033.320
Degrees of freedom	32
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted			
Actual	0	1	2	Total
0	3978	126	1	4105
1	1072	206	0	1278
2	852	76	0	928
Total	5902	408	1	6311

Table D21.

Logit Equation: Q10H. Fire increases chances of insect outbreaks and plant disease.
(True, 1/False, 2/ Uncertain, 0)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Characteristics in numerator of Prob[Y = 1]				
Constant	1.667610570	.60902183	2.738	.0062	
AGE	-.1175968211E-02	.19767471E-02	-.595	.5519	42.950251
FEMALE	-.2787490158	.72690879E-01	-3.835	.0001	.52014611
NONWH2	.5508277873	.10151383	5.426	.0000	.14350093
NONWH3	.4881552906E-01	.11607545	.421	.6741	.11356748
EDUC_YR	-.5550586858E-01	.17110256E-01	-3.244	.0012	13.300444
LNINC1	-.4910832794E-01	.59006310E-01	-.832	.4053	10.620852
NONUS	.1852011358	.16855226	1.099	.2719	.48053332E-01
NONRU2	-.3086266951	.15477686	-1.994	.0462	.78044093
NONRU3	-.2298665775	.17097444	-1.344	.1788	.15967503
REGION2	.2507528329	.81761424E-01	3.067	.0022	.32467294
REGION3	.2613882596	.12840957	2.036	.0418	.10738056
REGION4	-.9591905227E-01	.11305799	-.848	.3962	.13907816
UNEMPLOY	.8208988975E-01	.76884229E-01	1.068	.2857	.38887221
F9	-.1742451085	.84337357E-01	-2.066	.0388	.76754730
INTRO	.4991032428E-01	.69995586E-01	.713	.4758	.49068422
NEWDATA	-.2982162731	.71248460E-01	-4.186	.0000	.47774638
	Characteristics in numerator of Prob[Y = 2]				
Constant	-.1264401696	.54395573	-.232	.8162	
AGE	.4073585194E-02	.17974550E-02	2.266	.0234	42.950251
FEMALE	-.4636540343	.63695013E-01	-7.279	.0000	.52014611
NONWH2	-.4141019340E-01	.99607166E-01	-.416	.6776	.14350093
NONWH3	-.2187952640	.10692149	-2.046	.0407	.11356748
EDUC_YR	.2625071566E-01	.14954883E-01	1.755	.0792	13.300444
LNINC1	.2129246373E-01	.52614204E-01	.405	.6857	10.620852
NONUS	.3042632453	.15358052	1.981	.0476	.48053332E-01
NONRU2	-.2362236494	.13963838	-1.692	.0907	.78044093
NONRU3	-.2195970769	.15434686	-1.423	.1548	.15967503
REGION2	.2129936717	.73307315E-01	2.905	.0037	.32467294
REGION3	.3746989387	.11038642	3.394	.0007	.10738056
REGION4	.8812786447E-01	.94342447E-01	.934	.3502	.13907816
UNEMPLOY	-.2338952619	.69739063E-01	-3.354	.0008	.38887221
F9	.5544069438	.81467651E-01	6.805	.0000	.76754730
INTRO	.2716196809E-01	.61679453E-01	.440	.6597	.49068422
NEWDATA	-.2126035576	.62657590E-01	-3.393	.0007	.47774638

Number of observations	6313
Log likelihood function	-6442.365
Restricted log likelihood	-6697.501
Chi-squared	510.2734
Degrees of freedom	32
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	1	2	Total
0	169	98	1449	1716
1	153	134	1076	1363
2	133	101	3000	3234
Total	455	333	5525	6313

Table D22.

Logit Equation: Q10I. Many plants require fire as part of their life cycle. (True, 1/False, 2/ Uncertain, 0)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Characteristics in numerator of Prob[Y = 1]				
Constant	.5966218609	.61436035	.971	.3315	
AGE	-.1894645525E-02	.19966264E-02	-.949	.3427	42.952479
FEMALE	-.8270646485	.72968646E-01	-11.335	.0000	.52019500
NONWH2	-.2298243599	.11044872	-2.081	.0375	.14351035
NONWH3	-.2637929032	.12420276	-2.124	.0337	.11357493
EDUC_YR	.1256733734	.17019099E-01	7.384	.0000	13.300871
LNINC1	-.9132199975E-01	.59878112E-01	-1.525	.1272	10.621115
NONUS	-.5070499014	.15131259	-3.351	.0008	.48056486E-01
NONRU2	-.2824622111	.15235386	-1.854	.0637	.78033090
NONRU3	-.2050133396	.16781726	-1.222	.2218	.15978114
REGION2	-.1279097851	.81400692E-01	-1.571	.1161	.32464918
REGION3	.3341425941	.12679818	2.635	.0084	.10738761
REGION4	.1481799595	.10847258	1.366	.1719	.13908729
UNEMPLOY	.5626302710E-01	.78286485E-01	.719	.4723	.38883135
F9	.7324500894	.87226253E-01	8.397	.0000	.76769405
INTRO	.1661607476E-01	.69328776E-01	.240	.8106	.49092899
NEWDATA	-.2119783102	.70443669E-01	-3.009	.0026	.47760172
	Characteristics in numerator of Prob[Y = 2]				
Constant	1.808348135	.65672030	2.754	.0059	
AGE	-.1675571411E-01	.21430417E-02	-7.819	.0000	42.952479
FEMALE	-.3342527533	.79117012E-01	-4.225	.0000	.52019500
NONWH2	.6147585638	.10758008	5.714	.0000	.14351035
NONWH3	.4967298699	.12353126	4.021	.0001	.11357493
EDUC_YR	.5286510861E-02	.18466513E-01	.286	.7747	13.300871
LNINC1	-.4897034558E-01	.63797926E-01	-.768	.4427	10.621115
NONUS	-.9637238972	.16750166	-5.754	.0000	.48056486E-01
NONRU2	-.4665242534E-02	.16950004	-.028	.9780	.78033090
NONRU3	-.1414344304	.18705995	-.756	.4496	.15978114
REGION2	.3285787195E-01	.85748783E-01	.383	.7016	.32464918
REGION3	-.1046536621	.14352595	-.729	.4659	.10738761
REGION4	-.3662325227	.12395644	-2.955	.0031	.13908729
UNEMPLOY	.6355759818E-01	.82819766E-01	.767	.4428	.38883135
F9	.2216511735	.88647438E-01	2.500	.0124	.76769405
INTRO	-.1231557596	.74689608E-01	-1.649	.0992	.49092899
NEWDATA	-.4399960024	.76039238E-01	-5.786	.0000	.47760172

Number of observations	6314
Log likelihood function	-6025.026
Restricted log likelihood	-6487.672
Chi-squared	925.2919
Degrees of freedom	32
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	1	2	Total
0	68	978	136	1182
1	49	3349	201	3599
2	52	1149	332	1533
Total	169	5476	669	6314

Table D23.

Logit Equation: Q10J. Fire is useful to control undesirable weeds and plants. (True, 0/False, 1/ Uncertain, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Characteristics in numerator of Prob[Y = 1]				
Constant	-2.408308370	.55556282	-4.335	.0000	
AGE	-.8667775598E-02	.18373842E-02	-4.717	.0000	42.956737
FEMALE	.2860590323	.64548376E-01	4.432	.0000	.51980669
NONWH2	.8544278678	.87489451E-01	9.766	.0000	.14346739
NONWH3	.6141775418	.10055178	6.108	.0000	.11315917
EDUC_YR	-.3627730822E-01	.15185277E-01	-2.389	.0169	13.301628
LNINC1	.1951196134	.53763156E-01	3.629	.0003	10.621351
NONUS	.2627738492	.14520870	1.810	.0704	.47501742E-01
NONRU2	.3996309521	.15001250	2.664	.0077	.78034124
NONRU3	.1195496247	.16685751	.716	.4737	.15971560
REGION2	-.2312005363	.73556935E-01	-3.143	.0017	.32429872
REGION3	-.3160501152	.11248132	-2.810	.0050	.10728722
REGION4	-.2445379563	.99549516E-01	-2.456	.0140	.13896666
UNEMPLOY	-.3014318558E-01	.70191419E-01	-.429	.6676	.38904178
F9	-.2468569037	.78841409E-01	-3.131	.0017	.76735535
INTRO	-.5637423999E-01	.62641907E-01	-.900	.3681	.49049671
NEWDATA	-.3500316104	.64258298E-01	-5.447	.0000	.47793171
	Characteristics in numerator of Prob[Y = 2]				
Constant	-1.665497302	.68411870	-2.435	.0149	
AGE	-.3812975407E-02	.22169059E-02	-1.720	.0854	42.956737
FEMALE	.5313128342	.81840506E-01	6.492	.0000	.51980669
NONWH2	-.1699092257	.13008895	-1.306	.1915	.14346739
NONWH3	.2199598303	.13143999	1.673	.0942	.11315917
EDUC_YR	-.3566323142E-01	.19089403E-01	-1.868	.0617	13.301628
LNINC1	.6141085199E-01	.66546571E-01	.923	.3561	10.621351
NONUS	.6056689618	.16579110	3.653	.0003	.47501742E-01
NONRU2	.2649939967	.17726967	1.495	.1350	.78034124
NONRU3	.1357560506	.19585998	.693	.4882	.15971560
REGION2	-.3758425757	.92935695E-01	-4.044	.0001	.32429872
REGION3	-.4620318241	.14605325	-3.163	.0016	.10728722
REGION4	-.2094226819	.12039213	-1.740	.0819	.13896666
UNEMPLOY	.7537461314E-01	.86397357E-01	.872	.3830	.38904178
F9	-.4875449056	.94789495E-01	-5.143	.0000	.76735535
INTRO	-.4699587006E-01	.77896842E-01	-.603	.5463	.49049671
NEWDATA	.1086238749	.79153421E-01	1.372	.1700	.47793171

Number of observations	6309
Log likelihood function	-5415.401
Restricted log likelihood	-5645.450
Chi-squared	460.0985
Degrees of freedom	32
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted			
Actual	0	1	2	Total
0	4181	39	1	4221
1	1225	49	0	1274
2	795	16	3	814
Total	6201	104	4	6309

Table 23A.

Ordered Logit Equation: Fire Knowledge (Score = 0, 1, 2, 3, 4)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Index function for probability				
Constant	-.7770950573	.39852804	-1.950	.0512	
AGE	.1493735577E-02	.13255695E-02	1.127	.2598	42.959375
FEMALE	-.2906584043	.46950223E-01	-6.191	.0000	.52024440
NONWH2	-.7681830955	.69504878E-01	-11.052	.0000	.14344296
NONWH3	-.5291106687	.79331964E-01	-6.670	.0000	.11352159
EDUC_YR	.1337120486	.10975433E-01	12.183	.0000	13.301200
LNINC1	.1103914933	.38799857E-01	2.845	.0044	10.620846
NONUS	-.5014067116	.11030190	-4.546	.0000	.48033917E-01
NONRU2	.1262812480	.96846314E-01	1.304	.1923	.78043406
NONRU3	.1483787135	.10803666	1.373	.1696	.15970610
REGION2	.2276509052	.53604668E-01	4.247	.0000	.32465865
REGION3	.2968014097	.79212571E-01	3.747	.0002	.10733718
REGION4	.3531728821	.72235919E-01	4.889	.0000	.13902197
UNEMP	-.1296568274	.51614224E-01	-2.512	.0120	.38894244
F9	.5678633752	.59787751E-01	9.498	.0000	.76750945
INTRO	.1325154347	.45485998E-01	2.913	.0036	.49083020
NEWDATA	-.8886462167E-01	.46223292E-01	-1.923	.0545	.47768512
	Threshold parameters for index				
Mu(1)	1.334083694	.26940659E-01	49.519	.0000	
Mu(2)	2.658125771	.26189333E-01	101.497	.0000	
Mu(3)	4.342905280	.35605123E-01	121.974	.0000	

Number of observations	6317
Log likelihood function	-9134.771
Restricted log likelihood	-9224.974
Chi squared	180.4071
Degrees of freedom	16
Significance Level	.0000000

Cell frequencies for outcomes

Y	Count	Freq	Y	Count	Freq	Y	Count	Freq
0	378	.059	1	770	.121	2	1590	.251
3	2333	.369	4	1246	.197			

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	1	2	3	4	Total
0	3	36	153	186	0	378
1	3	29	213	518	7	770
2	2	28	312	1208	40	1590
3	1	14	263	1981	74	2333
4	0	2	132	1072	40	1246
Total	9	109	1073	4965	161	6317

Attitudes, Opinions, Preferences Equations

Table D24.

Logit Equation: Q11A. An area burned by wildfire should be left alone to recover naturally.
(Agree, 1/Disagree, 0/Uncertain, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Characteristics in numerator of Prob[Y = 1]					
Constant	.8321415949	.51080029	1.629	.1033	
AGE	-.1091508537E-02	.16631601E-02	-.656	.5116	42.914415
FEMALE	-.1875303163	.59804290E-01	-3.136	.0017	.52199801
NONWH2	-.7796877098	.83561029E-01	-9.331	.0000	.14311282
NONWH3	-.8201289287	.95659187E-01	-8.573	.0000	.11428987
EDUC_YR	.9001973838E-01	.14102544E-01	6.383	.0000	13.293968
LNINC1	-.1028793652	.49652760E-01	-2.072	.0383	10.619103
NONUS	.3792831676	.14556497	2.606	.0092	.48447525E-01
NONRU2	-.4266438426E-01	.12955219	-.329	.7419	.78091863
NONRU3	.5193747928E-01	.14414138	.360	.7186	.15963447
REGION2	-.1034575616	.68974649E-01	-1.500	.1336	.32390534
REGION3	-.1055266902	.10097478	-1.045	.2960	.10704859
REGION4	-.3329120339	.90889760E-01	-3.663	.0002	.13868038
UNEMPLOY	.1858026411	.65625752E-01	2.831	.0046	.38974491
NEWDATA	.1539045749	.59751477E-01	2.576	.0100	.47720337
Characteristics in numerator of Prob[Y = 2]					
Constant	-1.093530998	.69759020	-1.568	.1170	
AGE	.7451884886E-02	.22554261E-02	3.304	.0010	42.914415
FEMALE	.4033722572	.82525750E-01	4.888	.0000	.52199801
NONWH2	-.7727756776	.12232647	-6.317	.0000	.14311282
NONWH3	-.4415631144	.12954294	-3.409	.0007	.11428987
EDUC_YR	.4144704142E-01	.19180813E-01	2.161	.0307	13.293968
LNINC1	-.3870702027E-01	.68086469E-01	-.568	.5697	10.619103
NONUS	.5779703883	.18078726	3.197	.0014	.48447525E-01
NONRU2	-.2450705744	.16548077	-1.481	.1386	.78091863
NONRU3	-.1271499569	.18495361	-.687	.4918	.15963447
REGION2	-.7683838080E-01	.93817620E-01	-.819	.4128	.32390534
REGION3	-.1168009746	.13919898	-.839	.4014	.10704859
REGION4	-.8713480768E-01	.12031818	-.724	.4689	.13868038
UNEMPLOY	.4227136615E-01	.89369458E-01	.473	.6362	.38974491
NEWDATA	.3544834099	.80699708E-01	4.393	.0000	.47720337

Number of observations	6346
Log likelihood function	-6067.492
Restricted log likelihood	-6240.239
Chi-squared	345.4958
Degrees of freedom	28
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	1	2	Total
0	131	1541	0	1672
1	116	3492	0	3608
2	45	1021	0	1066
Total	292	6054	0	6346

Table D25.

Logit Equation: Q11B. Wildfires in remote areas should be allowed to burn if human life or property is not threatened. (Agree, 1/Disagree, 0/Uncertain, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Characteristics in numerator of Prob[Y = 1]					
Constant	-2.291370406	.49111895	-4.666	.0000	
AGE	.1331343383E-01	.16183091E-02	8.227	.0000	42.918797
FEMALE	-.3143832777	.57168735E-01	-5.499	.0000	.52217257
NONWH2	-.2997378909	.87110190E-01	-3.441	.0006	.14274121
NONWH3	.7381458702E-01	.94879061E-01	.778	.4366	.11432808
EDUC_YR	.9225380396E-01	.13426269E-01	6.871	.0000	13.294930
LNINC1	.9372400543E-02	.47630455E-01	.197	.8440	10.619439
NONUS	.6702373744E-01	.13531254	.495	.6204	.48463727E-01
NONRU2	.7368272893E-01	.12496391	.590	.5554	.78100683
NONRU3	.1940562946	.13791293	1.407	.1594	.15952639
REGION2	-.1771838499	.66900903E-01	-2.648	.0081	.32401365
REGION3	.5536988791	.95944641E-01	5.771	.0000	.10711359
REGION4	.2966544500	.85021704E-01	3.489	.0005	.13872676
UNEMPLOY	-.3337922305E-01	.63409904E-01	-.526	.5986	.38948773
NEWDATA	.1321794022	.56963436E-01	2.320	.0203	.47695250
Characteristics in numerator of Prob[Y = 2]					
Constant	-2.929060703	.70570930	-4.151	.0000	
AGE	.2251770910E-01	.23248416E-02	9.686	.0000	42.918797
FEMALE	.2627856950	.83907998E-01	3.132	.0017	.52217257
NONWH2	-.3622531297	.12807656	-2.828	.0047	.14274121
NONWH3	.1057300128	.14161949	.747	.4553	.11432808
EDUC_YR	.3401656951E-01	.19223029E-01	1.770	.0768	13.294930
LNINC1	-.2167095067E-02	.68976623E-01	-.031	.9749	10.619439
NONUS	.2155174942	.19000126	1.134	.2567	.48463727E-01
NONRU2	-.2153469723	.15699758	-1.372	.1702	.78100683
NONRU3	-.3095890940	.17955769	-1.724	.0847	.15952639
REGION2	.8703299340E-01	.92999146E-01	.936	.3494	.32401365
REGION3	.4986788968	.13575006	3.674	.0002	.10711359
REGION4	-.1586131598	.14061362	-1.128	.2593	.13872676
UNEMPLOY	.2818619856E-01	.91768603E-01	.307	.7587	.38948773
NEWDATA	.1578066532	.81981728E-01	1.925	.0542	.47695250

Number of observations	6347
Log likelihood function	-5914.800
Restricted log likelihood	-6123.936
Chi-squared	418.2729
Degrees of freedom	28
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted			
Actual	0	1	2	Total
0	2427	632	0	3059
1	1523	942	1	2466
2	580	242	0	822
Total	4530	1816	1	6347

Table D26.

Logit Equation: Q11C. All wildfires should be put out, regardless of location. (Agree, 1/Disagree, 0/Uncertain, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Characteristics in numerator of Prob[Y = 1]				
Constant	6.305013182	.53996301	11.677	.0000	
AGE	-.1354510183E-01	.17555368E-02	-7.716	.0000	42.920307
FEMALE	.5888689820	.60979825E-01	9.657	.0000	.52178663
NONWH2	1.026671933	.10372912	9.898	.0000	.14305487
NONWH3	.7186184549	.10864604	6.614	.0000	.11424358
EDUC_YR	-.2429548003	.14976452E-01	-16.222	.0000	13.295128
LNINC1	-.2124569894	.51894443E-01	-4.094	.0000	10.619179
NONUS	-.3901404828	.14824977	-2.632	.0085	.48427907E-01
NONRU2	.7153861792E-01	.12754997	.561	.5749	.78100735
NONRU3	.7172745579E-01	.14292298	.502	.6158	.15956983
REGION2	.1886735345	.71327688E-01	2.645	.0082	.32377417
REGION3	-.5788032171	.99737212E-01	-5.803	.0000	.10719577
REGION4	-.2960683592	.90433311E-01	-3.274	.0011	.13862422
UNEMPLOY	.1317400615	.68607676E-01	1.920	.0548	.38977762
NEWDATA	-.2720607858	.60393623E-01	-4.505	.0000	.47717774
	Characteristics in numerator of Prob[Y = 2]				
Constant	.1093676068	.89689648	.122	.9029	
AGE	-.1126806583E-02	.28907069E-02	-.390	.6967	42.920307
FEMALE	.5748397051	.10116818	5.682	.0000	.52178663
NONWH2	-.3464479800	.21820038	-1.588	.1123	.14305487
NONWH3	.1515524924	.18760808	.808	.4192	.11424358
EDUC_YR	-.8973858671E-01	.24045383E-01	-3.732	.0002	13.295128
LNINC1	-.5220758184E-01	.86667003E-01	-.602	.5469	10.619179
NONUS	.3478195645	.21454007	1.621	.1050	.48427907E-01
NONRU2	.1271364984	.21794494	.583	.5597	.78100735
NONRU3	.2394400908	.23989184	.998	.3182	.15956983
REGION2	-.5406428822E-01	.11911938	-.454	.6499	.32377417
REGION3	-.1809848075	.15493157	-1.168	.2427	.10719577
REGION4	-.4449713207	.15842414	-2.809	.0050	.13862422
UNEMPLOY	.2193774039	.11288543	1.943	.0520	.38977762
NEWDATA	-.6509338081E-01	.99881606E-01	-.652	.5146	.47717774

Number of observations	6350
Log likelihood function	-5041.360
Restricted log likelihood	-5604.165
Chi-squared	1125.610
Degrees of freedom	28
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted			
Actual	0	1	2	Total
0	1463	1137	0	2600
1	714	2439	0	3153
2	231	366	0	597
Total	2408	3942	0	6350

Table 27.

Logit Equation: Q11D. Where wildfire is common, homeowners should have to follow government guidelines to manage for wildfire risk. (Agree, 1/Disagree, 0/Uncertain, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Characteristics in numerator of Prob[Y = 1]				
Constant	-1.960789404	.60885000	-3.220	.0013	
AGE	.1576359696E-01	.20154565E-02	7.821	.0000	42.891739
FEMALE	-.1140893700	.73132255E-01	-1.560	.1188	.52150866
NONWH2	-.6158858078	.97042330E-01	-6.347	.0000	.14324421
NONWH3	-.6671793632	.10941999	-6.097	.0000	.11426469
EDUC_YR	.7698248652E-01	.17579666E-01	4.379	.0000	13.296188
LNINC1	.1479724353	.58620794E-01	2.524	.0116	10.620298
NONUS	.2035243378	.17090665	1.191	.2337	.48492004E-01
NONRU2	-.3752852755	.16508117	-2.273	.0230	.78160952
NONRU3	-.8911297305E-01	.18376128	-.485	.6277	.15888901
REGION2	.1006331557	.82523518E-01	1.219	.2227	.32447124
REGION3	.6267140020	.13902696	4.508	.0000	.10667693
REGION4	.1630525070	.11314713	1.441	.1496	.13866724
UNEMPLOY	-.8240366311E-01	.78239035E-01	-1.053	.2922	.38993062
NEWDATA	.1064956305	.72992323E-01	1.459	.1446	.47747960
SCORE4	.2303644078	.31882581E-01	7.225	.0000	2.3308176
	Characteristics in numerator of Prob[Y = 2]				
Constant	-2.044901344	.75469138	-2.710	.0067	
AGE	.8926453621E-02	.24470334E-02	3.648	.0003	42.891739
FEMALE	.5897539029	.92200584E-01	6.396	.0000	.52150866
NONWH2	-.5859227619	.12171300	-4.814	.0000	.14324421
NONWH3	-.5232976504	.13799535	-3.792	.0001	.11426469
EDUC_YR	.3680845438E-01	.21762184E-01	1.691	.0908	13.296188
LNINC1	.1055549707	.72607761E-01	1.454	.1460	10.620298
NONUS	.5579928735	.19023340	2.933	.0034	.48492004E-01
NONRU2	.5332365560E-01	.21024929	.254	.7998	.78160952
NONRU3	.6470347547E-01	.23357591	.277	.7818	.15888901
REGION2	-.1862481576	.10199859	-1.826	.0679	.32447124
REGION3	.5762520303E-01	.17621708	.327	.7437	.10667693
REGION4	-.2388528678E-01	.13863596	-.172	.8632	.13866724
UNEMPLOY	.1004209954	.95075071E-01	1.056	.2909	.38993062
NEWDATA	.2753270581	.89446306E-01	3.078	.0021	.47747960
SCORE4	-.1165929802	.38720162E-01	-3.011	.0026	2.3308176

Number of observations	6341
Log likelihood function	-5207.795
Restricted log likelihood	-5559.982
Chi squared	704.3742
Degrees of freedom	30
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	1	2	Total
0	18	796	9	823
1	9	4479	25	4513
2	5	971	29	1005
Total	32	6246	63	

Table D28.

Logit Equation: Q11E. People who choose to live near forests or rangelands should be willing to accept the risks of wildfires. (Agree, 1/Disagree, 0/Uncertain, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Characteristics in numerator of Prob[Y = 1]					
Constant	.7170417952	.72627293	.987	.3235	
AGE	.3692694029E-02	.23154059E-02	1.595	.1107	42.915475
FEMALE	-.1464529797	.86101406E-01	-1.701	.0890	.52168668
NONWH2	-1.036629522	.10990567	-9.432	.0000	.14310016
NONWH3	-.6669236109	.12990200	-5.134	.0000	.11415873
EDUC_YR	.9082931537E-01	.20427335E-01	4.446	.0000	13.294466
LNINC1	-.1492588462E-01	.70742167E-01	-.211	.8329	10.619107
NONUS	.3969495446E-01	.19125077	.208	.8356	.48443239E-01
NONRU2	.2658528196	.17444226	1.524	.1275	.78108214
NONRU3	.1711318238	.19416822	.881	.3781	.15947623
REGION2	.1790421136	.98335400E-01	1.821	.0686	.32399470
REGION3	.5703549058	.16469011	3.463	.0005	.10722971
REGION4	-.4681590454E-02	.13006868	-.036	.9713	.13833010
UNEMPLOY	-.2770439042	.91339360E-01	-3.033	.0024	.38963496
NEWDATA	.1831854265	.86450198E-01	2.119	.0341	.47705974
Characteristics in numerator of Prob[Y = 2]					
Constant	1.940894091	.83301739	2.330	.0198	
AGE	.1375551605E-02	.26493993E-02	.519	.6036	42.915475
FEMALE	.5119595006	.10016790	5.111	.0000	.52168668
NONWH2	-.6007727637	.12619261	-4.761	.0000	.14310016
NONWH3	-.5020032449	.15317108	-3.277	.0010	.11415873
EDUC_YR	-.7114850174E-01	.23524239E-01	-3.024	.0025	13.294466
LNINC1	-.6824265095E-01	.81039304E-01	-.842	.3997	10.619107
NONUS	.5436663617E-01	.21882459	.248	.8038	.48443239E-01
NONRU2	.2568309858	.20153521	1.274	.2025	.78108214
NONRU3	-.4918449523E-02	.22534244	-.022	.9826	.15947623
REGION2	-.1412025796	.11305978	-1.249	.2117	.32399470
REGION3	.2130390674E-01	.19190124	.111	.9116	.10722971
REGION4	-.7482988954E-01	.14953408	-.500	.6168	.13833010
UNEMPLOY	-.3556589571	.10506723	-3.385	.0007	.38963496
NEWDATA	.3173015194	.98919676E-01	3.208	.0013	.47705974

Number of observations	6346
Log likelihood function	-4912.679
Restricted log likelihood	-5133.885
Chi-squared	442.4106
Degrees of freedom	28
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted			
Actual	0	1	2	Total
0	0	556	1	557
1	0	4693	0	4693
2	0	1093	3	1096
Total	0	6342	4	6346

Table 29.

Logit Equation: Q11aA. Public land managers should use mechanical ground vegetation removal as part of a wildfire management program in my state/region. (Agree, 1/Disagree, 0/Uncertain, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Characteristics in numerator of Prob[Y = 1]					
Constant	.6662577442E-01	.68388406	.097	.9224	
AGE	.1498715981E-01	.23338557E-02	6.422	.0000	42.899571
FEMALE	.3569145313E-01	.82114889E-01	.435	.6638	.52154551
NONWH2	-.1475429646	.11854461	-1.245	.2133	.14322429
NONWH3	.1083918254	.13528210	.801	.4230	.11437888
EDUC_YR	-.3879662639E-01	.19383830E-01	-2.001	.0453	13.295434
LNINC1	.9608107232E-01	.66411169E-01	1.447	.1480	10.619548
NONUS	.2744585855	.21287411	1.289	.1973	.48389179E-01
NONRU2	.5630030739E-01	.17014016	.331	.7407	.78145846
NONRU3	.2595375162	.19290944	1.345	.1785	.15914442
REGION2	.2838629340	.95610188E-01	2.969	.0030	.32428625
REGION3	.2056165234	.13214946	1.556	.1197	.10716032
REGION4	.3921941727	.12931842	3.033	.0024	.13830590
UNEMPLOY	-.7567454755E-01	.89873504E-01	-.842	.3998	.38997864
NEWDATA	.3163895312	.82825539E-01	3.820	.0001	.47749582
SCORE4	-.4739341599E-02	.36999806E-01	-.128	.8981	2.3306161
Characteristics in numerator of Prob[Y = 2]					
Constant	.9779400041E-01	.74200531	.132	.8951	
AGE	.7019827623E-02	.25077564E-02	2.799	.0051	42.899571
FEMALE	.7152412116	.89513838E-01	7.990	.0000	.52154551
NONWH2	-.3239942418	.12794812	-2.532	.0113	.14322429
NONWH3	-.1587605516	.14944149	-1.062	.2881	.11437888
EDUC_YR	-.2598568392E-01	.21196023E-01	-1.226	.2202	13.295434
LNINC1	.5862083926E-01	.72015033E-01	.814	.4156	10.619548
NONUS	.3577765269	.22394006	1.598	.1101	.48389179E-01
NONRU2	.2070512036	.18682134	1.108	.2677	.78145846
NONRU3	.1467554912	.21223920	.691	.4893	.15914442
REGION2	.1486589946	.10257701	1.449	.1473	.32428625
REGION3	-.3264599455	.15169193	-2.152	.0314	.10716032
REGION4	.3650193516E-01	.14183310	.257	.7969	.13830590
UNEMPLOY	.5080390791E-01	.96612760E-01	.526	.5990	.38997864
NEWDATA	.4724459374	.89350718E-01	5.288	.0000	.47749582
SCORE4	-.2334043685	.39586240E-01	-5.896	.0000	2.3306161

Number of observations	6340
Log likelihood function	-5707.619
Restricted log likelihood	-5924.980
Chi squared	434.7210
Degrees of freedom	30
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted			
Actual	0	1	2	Total
0	0	699	53	752
1	0	3457	234	3691
2	0	1637	260	1897
Total	0	5793	547	6340

Table D30.

Logit Equation: Q11aB. Public land managers should use chemical treatments to control ground vegetation as part of a wildfire management program in my state/region. (Agree, 1/Disagree, 0/Uncertain, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Characteristics in numerator of Prob[Y = 1]					
Constant	.1073456458	.51985585	.206	.8364	
AGE	.1024986053E-01	.16933980E-02	6.053	.0000	42.917751
FEMALE	-.1595511132	.61363672E-01	-2.600	.0093	.52214056
NONWH2	.6229518339E-01	.89892542E-01	.693	.4883	.14315838
NONWH3	.6005852055	.10128665	5.930	.0000	.11432625
EDUC_YR	-.8966075918E-01	.14495932E-01	-6.185	.0000	13.294619
LNINC1	.3965686541E-01	.50674393E-01	.783	.4339	10.618876
NONUS	-.3082524150	.15787276	-1.953	.0509	.48462947E-01
NONRU2	-.3198287710	.12316306	-2.597	.0094	.78097462
NONRU3	-.1192623119	.13747836	-.867	.3857	.15966168
REGION2	.4635878608	.70323545E-01	6.592	.0000	.32413583
REGION3	.2550176490	.10135171	2.516	.0119	.10727333
REGION4	.6587711929E-01	.95765556E-01	.688	.4915	.13872453
UNEMPLOY	.1266529513	.66854040E-01	1.894	.0582	.38960187
NEWDATA	.4807535725E-01	.60899388E-01	.789	.4299	.47735935
SCORE4	-.1013340123	.27428075E-01	-3.695	.0002	2.3310687
Characteristics in numerator of Prob[Y = 2]					
Constant	-1.388968617	.58345123	-2.381	.0173	
AGE	.6075698586E-02	.18801250E-02	3.232	.0012	42.917751
FEMALE	.4840416175	.68892292E-01	7.026	.0000	.52214056
NONWH2	-.3684190447	.10443219	-3.528	.0004	.14315838
NONWH3	.2478844444	.11391991	2.176	.0296	.11432625
EDUC_YR	-.6680975082E-01	.16264004E-01	-4.108	.0000	13.294619
LNINC1	.1071638612	.56553555E-01	1.895	.0581	10.618876
NONUS	.3708522946	.14486023	2.560	.0105	.48462947E-01
NONRU2	.1857402702	.15375756	1.208	.2270	.78097462
NONRU3	.1687091000	.16992596	.993	.3208	.15966168
REGION2	.3350591557	.77657564E-01	4.315	.0000	.32413583
REGION3	.4570984703E-01	.11839867	.386	.6994	.10727333
REGION4	.9716634328E-01	.10259817	.947	.3436	.13872453
UNEMPLOY	.1008754903E-01	.73711768E-01	.137	.8911	.38960187
NEWDATA	.2675882129	.67084934E-01	3.989	.0001	.47735935
SCORE4	-.2629404678	.29736201E-01	-8.842	.0000	2.3310687

Number of observations	6344
Log likelihood function	-6406.252
Restricted log likelihood	-6639.027
Chi squared	465.5504
Degrees of freedom	30
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	1	2	Total
0	2951	193	73	3217
1	1470	213	61	1744
2	1178	113	92	1383
Total	5599	519	226	6344

Table D31.

Logit Equation: Q11aC. Public land managers and forest professionals can be trusted to select the most appropriate methods for dealing with wildfire. (Agree, 1/Disagree, 0/Uncertain, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Characteristics in numerator of Prob[Y = 1]					
Constant	2.524359643	.64277026	3.927	.0001	
AGE	.2670438095E-02	.21537861E-02	1.240	.2150	42.907062
FEMALE	.2218613390	.74928837E-01	2.961	.0031	.52256540
NONWH2	-.5130622700	.10508715	-4.882	.0000	.14337841
NONWH3	.2277804811	.13010131	1.751	.0800	.11325425
EDUC_YR	-.3795332299E-01	.17714506E-01	-2.142	.0322	13.299139
LNINC1	-.1276738093	.63022029E-01	-2.026	.0428	10.619373
NONUS	-.2096248308	.17902225	-1.171	.2416	.48537433E-01
NONRU2	.3651420629	.14931253	2.445	.0145	.78143616
NONRU3	.3859378299	.17048023	2.264	.0236	.15915111
REGION2	.2461880928	.89523292E-01	2.750	.0060	.32385622
REGION3	-.1445139613	.12305867	-1.174	.2403	.10723627
REGION4	-.3720068786	.10692617	-3.479	.0005	.13769003
UNEMPLOY	.2569047834	.83882255E-01	3.063	.0022	.38988003
NEWDATA	.1689557592	.74497784E-01	2.268	.0233	.47823426
SCORE4	.9180441782E-01	.33328923E-01	2.754	.0059	2.3280883
Characteristics in numerator of Prob[Y = 2]					
Constant	1.545082470	.79363384	1.947	.0516	
AGE	.9224367207E-02	.26381908E-02	3.496	.0005	42.907062
FEMALE	.3395211497	.93420885E-01	3.634	.0003	.52256540
NONWH2	-.2913884648	.12885400	-2.261	.0237	.14337841
NONWH3	.1675200119E-01	.16310124	.103	.9182	.11325425
EDUC_YR	-.3612952207E-01	.21943507E-01	-1.646	.0997	13.299139
LNINC1	-.1665107113	.77800035E-01	-2.140	.0323	10.619373
NONUS	.6214945257	.19816308	3.136	.0017	.48537433E-01
NONRU2	.3674696623	.19041498	1.930	.0536	.78143616
NONRU3	.3386365867	.21542894	1.572	.1160	.15915111
REGION2	.1838198380	.10991508	1.672	.0944	.32385622
REGION3	-.5789122284E-01	.15566255	-.372	.7100	.10723627
REGION4	-.2636524236	.13676958	-1.928	.0539	.13769003
UNEMPLOY	.1119117687	.10366677	1.080	.2803	.38988003
NEWDATA	.2881550272	.92493629E-01	3.115	.0018	.47823426
SCORE4	-.1109272783	.40979140E-01	-2.707	.0068	2.3280883

Number of observations	6342
Log likelihood function	-5205.274
Restricted log likelihood	-5318.722
Chi squared	226.8956
Degrees of freedom	30
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	1	2	Total
0	0	945	0	945
1	0	4323	0	4323
2	0	1073	1	1074
Total	0	6341	1	6342

Table D32.

Logit Equation: Q11aD. It makes sense to salvage and sell timber damaged by wildfire on public lands. (Agree, 1/Disagree, 0/Uncertain, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Characteristics in numerator of Prob[Y = 1]					
Constant	.5455238423	.78834378	.692	.4889	
AGE	-.3488974669E-02	.27581682E-02	-1.265	.2059	42.889826
FEMALE	.3572402875	.97421189E-01	3.667	.0002	.52144568
NONWH2	-.3573464045	.13634283	-2.621	.0088	.14324692
NONWH3	-.2089374490	.15479211	-1.350	.1771	.11439696
EDUC_YR	-.6042026601E-01	.22357369E-01	-2.702	.0069	13.296498
LNINC1	.2056432043	.77235960E-01	2.663	.0078	10.619770
NONUS	-.2668394015	.22002818	-1.213	.2252	.48492922E-01
NONRU2	.5041875727	.18287829	2.757	.0058	.78146251
NONRU3	.1359504337	.20238990	.672	.5018	.15910680
REGION2	-.1580951793E-01	.11503733	-.137	.8907	.32424885
REGION3	-.3562616775	.14965240	-2.381	.0173	.10702738
REGION4	-.1808248948	.14740041	-1.227	.2199	.13870898
UNEMPLOY	.1405541986	.10946788	1.284	.1992	.38983607
NEWDATA	.2736220800	.98201048E-01	2.786	.0053	.47797540
Characteristics in numerator of Prob[Y = 2]					
Constant	.3665139920	.99768730	.367	.7133	
AGE	.4345628854E-02	.33709360E-02	1.289	.1973	42.889826
FEMALE	.6789707225	.12246338	5.544	.0000	.52144568
NONWH2	-.1576614396	.16978798	-.929	.3531	.14324692
NONWH3	.1449083083E-01	.19298766	.075	.9401	.11439696
EDUC_YR	-.1661547695	.28104342E-01	-5.912	.0000	13.296498
LNINC1	.1235427049	.97716843E-01	1.264	.2061	10.619770
NONUS	.5798211180	.25088197	2.311	.0208	.48492922E-01
NONRU2	.2630299501	.23091861	1.139	.2547	.78146251
NONRU3	.1016352291	.25472903	.399	.6899	.15910680
REGION2	-.9375954153E-01	.14188368	-.661	.5087	.32424885
REGION3	-.5899760294	.20124788	-2.932	.0034	.10702738
REGION4	-.1596155000	.18503652	-.863	.3883	.13870898
UNEMPLOY	.1474391957	.13476181	1.094	.2739	.38983607
NEWDATA	.3391064526	.12203557	2.779	.0055	.47797540

Number of observations	6340
Log likelihood function	-3780.420
Restricted log likelihood	-3880.926
Chi-squared	201.0109
Degrees of freedom	28
Significance level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	1	2	Total
0	0	500	0	500
1	0	5174	0	5174
2	0	666	0	666
Total	0	6340	0	6340

Table D33.

Logit Equation: Q11aE. Public land managers should use prescribed fire as part of a wildfire management program in my state/region. (Agree, 1/Disagree, 0/Uncertain, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Characteristics in numerator of Prob[Y = 1]					
Constant	2.167669883	.97956821	2.213	.0269	
AGE	.3519697172E-02	.32100426E-02	1.096	.2729	42.919367
FEMALE	-.7250855182	.12627486	-5.742	.0000	.52189762
NONWH2	-.8370896937	.14708695	-5.691	.0000	.14319058
NONWH3	-.5997635715	.17765179	-3.376	.0007	.11420722
EDUC_YR	.6698137705E-02	.28772289E-01	.233	.8159	13.294554
LNINC1	.7539278333E-01	.94634812E-01	.797	.4256	10.619209
NONUS	.1236086702E-01	.25913618	.048	.9620	.48473850E-01
NONRU2	.4899442082E-01	.25172561	.195	.8457	.78093578
NONRU3	-.1096064502	.27490588	-.399	.6901	.15958503
REGION2	-.1662229715	.13215862	-1.258	.2085	.32382638
REGION3	-.5183877800E-01	.20574487	-.252	.8011	.10705606
REGION4	.2960775807	.20835940	1.421	.1553	.13847822
UNEMPLOY	-.6285207839E-01	.12619193	-.498	.6184	.38989888
NEWDATA	.2335031603	.11948124	1.954	.0507	.47697622
SCORE4	.1342288133	.50588249E-01	2.653	.0080	2.3300183
Characteristics in numerator of Prob[Y = 2]					
Constant	1.706460472	1.4613387	1.168	.2429	
AGE	.8729526600E-02	.48387213E-02	1.804	.0712	42.919367
FEMALE	-.4540400918E-01	.19452910	-.233	.8154	.52189762
NONWH2	-.7961941833	.24222578	-3.287	.0010	.14319058
NONWH3	-.1393362507	.26809126	-.520	.6032	.11420722
EDUC_YR	-.1933669473E-01	.42817892E-01	-.452	.6516	13.294554
LNINC1	-.1638246662	.14195224	-1.154	.2485	10.619209
NONUS	1.075990408	.32469960	3.314	.0009	.48473850E-01
NONRU2	.6139879044E-01	.38496619	.159	.8733	.78093578
NONRU3	-.1672402850	.42484865	-.394	.6938	.15958503
REGION2	-.5764722985	.20466234	-2.817	.0049	.32382638
REGION3	-.7131439465	.34558816	-2.064	.0391	.10705606
REGION4	-.2204846985	.30584527	-.721	.4710	.13847822
UNEMPLOY	-.9067411665E-01	.19177068	-.473	.6363	.38989888
NEWDATA	.3724554803	.18019893	2.067	.0387	.47697622
SCORE4	-.1280170593	.77231658E-01	-1.658	.0974	2.3300183

Number of observations	6343
Log likelihood function	-2119.635
Restricted log likelihood	-2243.958
Chi squared	248.6461
Degrees of freedom	30
Significant level	.0000000

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted			
Actual	0	1	2	Total
0	0	275	0	275
1	0	5869	0	5869
2	0	199	0	199
Total	0	6343	0	6343

Table D34.

Ordered Logit Equation: Q12A. Smoke from prescribed fire.
(Concerned, 0/ Slightly Concerned, 1/ Not Concerned, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Index function for probability					
Constant	-2.198044599	.44681394	-4.919	.0000	
AGE	-.1478671680E-01	.14758736E-02	-10.019	.0000	42.635825
FEMALE	-.3946758095	.52104960E-01	-7.575	.0000	.51774499
NONWH2	-1.222623732	.83660074E-01	-14.614	.0000	.14137172
NONWH3	-.8015989287	.86995957E-01	-9.214	.0000	.11401984
EDUC_YR	.1293400460	.12628632E-01	10.242	.0000	13.327841
LNINC1	.1336049042	.43382673E-01	3.080	.0021	10.631452
NONUS	.1039225242	.12747338	.815	.4149	.47314521E-01
NONRU2	-.1428139292	.10947056	-1.305	.1920	.78202262
NONRU3	-.3447463651E-01	.12210604	-.282	.7777	.15868616
REGION2	-.2031962069	.60258914E-01	-3.372	.0007	.32252739
REGION3	-.6658703693E-01	.87124313E-01	-.764	.4447	.10770861
REGION4	-.1099183809	.79403741E-01	-1.384	.1663	.13792903
UNEMPLOY	-.1845946001	.56793445E-01	-3.250	.0012	.38329171
NEWDATA	.2635486913	.51860218E-01	5.082	.0000	.47575124
SCORE4	.2984154624	.23353805E-01	12.778	.0000	2.3501142
Threshold parameters for index					
Mu(1)	.7105373731	.21900489E-01	32.444	.0000	

Number of observations	6225
Log likelihood function	-5698.315
Restricted log likelihood	-6269.254
Chi squared	1141.877
Degrees of freedom	15
Significance level	.0000000

Cell frequencies for outcomes

Y	Count	Freq	Y	Count	Freq	Y	Count	Freq
0	2047	.328	1	1024	.164	2	3154	.506

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted			
Actual	0	1	2	Total
0	960	0	1087	2047
1	252	0	772	1024
2	549	0	2605	3154
Total	1761	0	4464	6225

Table D35.

Ordered Logit Equation: Q12B. Public land manager's ability to manage for fire in forests and rangeland. (Concerned, 0/ Slightly Concerned, 1/ Not Concerned, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Index function for probability					
Constant	-1.714943734	.43880194	-3.908	.0001	
AGE	-.1871283375E-01	.14733118E-02	-12.701	.0000	42.111029
FEMALE	-.5431066795E-01	.51290564E-01	-1.059	.2897	.51605263
NONWH2	-.9512697300	.81623112E-01	-11.654	.0000	.14272252
NONWH3	-.4076171763	.84442398E-01	-4.827	.0000	.11661668
EDUC_YR	.6744432996E-01	.12525360E-01	5.385	.0000	13.366805
LNINC1	.1602486278	.42633804E-01	3.759	.0002	10.633982
NONUS	.4462725918E-01	.12445052	.359	.7199	.48300621E-01
NONRU2	-.6326534322E-01	.10754789	-.588	.5564	.78205936
NONRU3	.1336832420E-01	.11979124	.112	.9111	.15901944
REGION2	-.3191823033E-01	.59149713E-01	-.540	.5895	.32651238
REGION3	-.2480656232	.86224362E-01	-2.877	.0040	.10946230
REGION4	-.4853632009	.77794046E-01	-6.239	.0000	.13812689
UNEMPLOY	-.7997647357E-02	.56070066E-01	-.143	.8866	.37590603
NEWDATA	.2543109315	.51044763E-01	4.982	.0000	.47312618
SCORE4	.2116074838	.23230884E-01	9.109	.0000	2.3610951
Threshold parameters for index					
Mu(1)	.9888179494	.25162604E-01	39.297	.0000	

Number of observations	5868
Log likelihood function	-5925.085
Restricted log likelihood	-6314.143
Chi squared	778.1142
Degrees of freedom	15
Significance level	.0000000

Cell frequencies for outcomes

Y	Count	Freq	Y	Count	Freq	Y	Count	Freq
0	2096	.357	1	1403	.239	2	2369	.403

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

Actual	Predicted 0	1	2	Total
0	1203	0	893	2096
1	538	0	865	1403
2	698	0	1671	2369
Total	2439	0	3429	5868

Table D36.

Ordered Logit Equation: Q12C. Harm to fish and wildlife from prescribed fire.
(Concerned, 0/ Slightly Concerned, 1/ Not Concerned, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Index function for probability					
Constant	-3.303353245	.45843597	-7.206	.0000	
AGE	-.1758377361E-02	.14922266E-02	-1.178	.2387	42.516680
FEMALE	-.3211062597	.52211297E-01	-6.150	.0000	.51447572
NONWH2	-.9556592901	.90841289E-01	-10.520	.0000	.14042438
NONWH3	-.2215512210	.89201150E-01	-2.484	.0130	.11491320
EDUC_YR	.9186930993E-01	.12541525E-01	7.325	.0000	13.321769
LNINC1	.1560349896	.44553549E-01	3.502	.0005	10.633576
NONUS	.1788654497	.12758520	1.402	.1609	.47822739E-01
NONRU2	-.1914007275	.11043371	-1.733	.0831	.78496686
NONRU3	-.1405291814	.12344547	-1.138	.2550	.15653701
REGION2	-.5831980498E-01	.60773158E-01	-.960	.3372	.32381470
REGION3	.1744234090	.86638261E-01	2.013	.0441	.10674325
REGION4	-.9989072235E-01	.78940938E-01	-1.265	.2057	.14034253
UNEMPLOY	-.5759317575E-01	.58094439E-01	-.991	.3215	.38090306
NEWDATA	.2243830178	.52042082E-01	4.312	.0000	.47726280
SCORE4	.2853080528	.23964200E-01	11.906	.0000	2.3544283
Threshold parameters for index					
Mu(1)	.8442960467	.24055778E-01	35.097	.0000	

Number of observations	6084
Log likelihood function	-5679.544
Restricted log likelihood	-6314.499
Chi squared	1269.910
Degrees of freedom	15
Significance level	.0000000

Cell frequencies for outcomes

Y	Count	Freq	Y	Count	Freq	Y	Count	Freq
0	2932	.481	1	1215	.199	2	1937	.318

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted			
Actual	0	1	2	Total
0	2464	0	468	2932
1	850	0	365	1215
2	1155	0	782	1937
Total	4469	0	1615	6084

Table D37.

Ordered Logit Equation: Q12D. Reduced scenic quality and recreation opportunities from prescribed fire. (Concerned, 0/ Slightly Concerned, 1/ Not Concerned, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Index function for probability					
Constant	-2.697766959	.44235608	-6.099	.0000	
AGE	-.3464944911E-02	.14800137E-02	-2.341	.0192	42.006733
FEMALE	-.1751219027	.51606020E-01	-3.393	.0007	.51596309
NONWH2	-.6704926073	.81936202E-01	-8.183	.0000	.13905616
NONWH3	-.3639696456	.85770422E-01	-4.244	.0000	.11624668
EDUC_YR	.1093639435	.12573995E-01	8.698	.0000	13.386710
LNINC1	.1139788426	.42701916E-01	2.669	.0076	10.644935
NONUS	.1803606674	.12572948	1.435	.1514	.47445564E-01
NONRU2	-.3036458558	.10974282	-2.767	.0057	.78584499
NONRU3	-.2997767196	.12261014	-2.445	.0145	.15590614
REGION2	.1515771493E-01	.59468922E-01	.255	.7988	.32112403
REGION3	.2917516284	.87040406E-01	3.352	.0008	.10918118
REGION4	.7060084453E-01	.78116192E-01	.904	.3661	.14160754
UNEMPLOY	-.1703313805	.56858219E-01	-2.996	.0027	.37567764
NEWDATA	.1324561528	.51290716E-01	2.582	.0098	.47363559
SCORE4	.3485562510	.23554069E-01	14.798	.0000	2.3693142
Threshold parameters for index					
Mu(1)	.8152842348	.23100550E-01	35.293	.0000	

Number of observations	5998
Log likelihood function	-5825.077
Restricted log likelihood	-6243.937
Chi squared	837.7201
Degrees of freedom	15
Significance level	.0000000

Cell frequencies for outcomes

Y	Count	Freq	Y	Count	Freq	Y	Count	Freq
0	2314	.385	1	1098	.183	2	2586	.431

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted			
Actual	0	1	2	Total
0	1364	0	950	2314
1	438	0	660	1098
2	674	0	1912	2586
Total	2476	0	3522	5998

Table 38.

Ordered Logit Equation: Q12E. Government will not consider the costs to taxpayers when developing fire management programs. (Concerned, 0/ Slightly Concerned, 1/ Not Concerned, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
Index function for probability					
Constant	-2.822989421	.45376556	-6.221	.0000	
AGE	-.1635340811E-01	.15156108E-02	-10.790	.0000	42.362284
FEMALE	.3637940495E-01	.52200935E-01	.697	.4859	.51690442
NONWH2	-.6552243432	.87332657E-01	-7.503	.0000	.14121053
NONWH3	-.4697532426	.89048906E-01	-5.275	.0000	.11533434
EDUC_YR	.5458093727E-01	.12608384E-01	4.329	.0000	13.357794
LNINC1	.2101308051	.43923638E-01	4.784	.0000	10.635055
NONUS	.5128098629E-01	.12824476	.400	.6893	.47424056E-01
NONRU2	-.9427450730E-01	.11025651	-.855	.3925	.78422179
NONRU3	-.1806270281	.12391247	-1.458	.1449	.15748220
REGION2	-.1157620754	.60573380E-01	-1.911	.0560	.32135881
REGION3	.6241331553E-01	.87625242E-01	.712	.4763	.10640189
REGION4	-.4451667331E-01	.78240966E-01	-.569	.5694	.13933970
UNEMPLOY	.1182712637	.57576881E-01	2.054	.0400	.37801562
NEWDATA	.6621082548E-01	.51710492E-01	1.280	.2004	.47680257
SCORE4	.1814689289	.23683965E-01	7.662	.0000	2.3523653
Threshold parameters for index					
Mu(1)	.8855127890	.24570313E-01	36.040	.0000	

Number of observations	6069
Log likelihood function	-5735.007
Restricted log likelihood	-6172.011
Chi squared	874.0081
Degrees of freedom	15
Significance level	.0000000

Cell frequencies for outcomes

Y	Count	Freq	Y	Count	Freq	Y	Count	Freq
0	3192	.526	1	1269	.209	2	1607	.264

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted			
Actual	0	1	2	Total
0	3047	0	146	3193
1	1150	0	119	1269
2	1440	0	167	1607
Total	5637	0	432	6069

Table D39.

Ordered Logit Equation: Government will not consider long-term ecosystem health when developing fire management programs. (Concerned, 0/ Slightly Concerned, 1/ Not Concerned, 2)

Variable	Coefficient	Standard Error	T-value	Prob. T-value	Mean of X
	Index function for probability				
Constant	-.5592984595	.47810256	-1.170	.2421	
AGE	-.1364633179E-01	.15968066E-02	-8.546	.0000	42.371148
FEMALE	-.2387896631E-01	.56114593E-01	-.426	.6704	.51996578
NONWH2	-.4770317442	.90753640E-01	-5.256	.0000	.14048790
NONWH3	-.3884198654	.96395368E-01	-4.029	.0001	.11476200
EDUC_YR	-.4663130850E-01	.13638703E-01	-3.419	.0006	13.365894
LNINC1	.7778630640E-01	.46422211E-01	1.676	.0938	10.631555
NONUS	.6111161433E-01	.13770707	.444	.6572	.48155886E-01
NONRU2	.9697526559E-01	.11915332	.814	.4157	.78017725
NONRU3	.1406986031E-01	.13271499	.106	.9156	.15984522
REGION2	-.1783685023	.64405203E-01	-2.769	.0056	.32462129
REGION3	.1715979755E-01	.92912736E-01	.185	.8535	.10790431
REGION4	-.3539196272	.88520264E-01	-3.998	.0001	.13705475
UNEMPLOY	-.9225585690E-01	.61674865E-01	-1.496	.1347	.37928534
NEWDATA	.1369047961	.55691173E-01	2.458	.0140	.47641818
SCORE4	.1121231183	.25169303E-01	4.455	.0000	2.3590933
	Threshold parameters for index				
Mu(1)	.8313717689	.26382619E-01	31.512	.0000	

Number of observations	6073
Log likelihood function	-5042.488
Restricted log likelihood	-5199.931
Chi squared	314.8865
Degrees of freedom	15
Significance level	.0000000

Cell frequencies for outcomes

Y	Count	Freq	Y	Count	Freq	Y	Count	Freq
0	4094	.674	1	918	.151	2	1061	.174

Frequencies of actual & predicted outcomes
Predicted outcome has maximum probability.

	Predicted			
Actual	0	1	2	Total
0	4094	0	0	4094
1	918	0	0	918
2	1061	0	0	1061
Total	6073	0	0	6073

Appendix E. Regression Methods

We describe below the three types of logistic models used for the regression analysis in this report. These models include the (1) binary logit model, (2) multinomial logit model, and (3) ordered logit model. Each of these models is used to relate qualitative responses to a set of explanatory variables. The binary logit is limited to two responses (e.g. yes/no). The multinomial logit allows for multiple responses (e.g., true/false/uncertain). The ordered logit allows for multiple responses that reflect quantitative ordering (e.g., concerned, slighty concerned, not concerned). These models facilitate estimation of the probabilities for given responses conditioned by selected explanatory variables. The models also allow estimation of function derivatives, i.e., the changes in probabilities of responses with respect to changes in explanatory variables.

The following description is adapted from Wooldride (2002). All models were estimated using LIMDEP 8.0 (Greene). A spreadsheet tool is available from the authors which contains all model estimates, mean explanatory variables, and programmed formulas allowing the user to estimate response probabilities for each of the questions in the study along with multiple combinations of explanatory variables.

Index Model for Binary Response: Logit

The logit model described below follows the lines of Wooldridge (2002, pp 457-59). The binary response model is given as

$$P(y=1\,|\,x) = G(x\beta) \equiv p(x), \qquad \text{(M1)}$$

where, $G(x\beta)$ can take on values strictly within the interval: $0 < G(z) < 1$ for all $z \in \Re$. This ensures that the estimated probabilities of response are bounded between zero and one.

The model in equation (M1) is known as an *index* model "because it restricts the way in which the response probability depends on x: $p(x)$ is a function of x only through the index $x\beta = \beta_1 + \beta_2 x_2 + \ldots + \beta_K x_K$."

Index models where G is a cumulative distribution function (cdf) can be derived generally from an underlying latent variable model:

$$y^* = x\beta + e, \quad y = 1[y^* > 0], \qquad \text{(M2)}$$

where y^* is an unobserved (or latent) variable, e is independent of x and the distribution of e is symmetric about zero. The function $1[\cdot]$ is an indicator function, which takes on the value of one if $y^* > 0$ occurs, and zero otherwise. When G is the cdf of e and the probability distribution function (pdf) of e is symmetric about zero, $1 - G(-z) = G(z)$ for all real numbers z. Thus,

$$P(y = 1|\, x) = P(y^* > 0|x) = P(e > -x\beta|\, x) = 1 - G(-x\beta) = G(x\beta). \qquad \text{(M3)}$$

In the logit model, e has the standard logistic distribution and G is the logistic function given as:

$$G(z) = \Lambda(z) = \exp(z)/[1 + \exp(z)], \qquad \text{(M4)}$$

which is between zero and unity for all $z \in \Re$. The G function is strictly increasing.

If the explanatory variable x_j is continuous, then the partial effect of x_j on $p(x)$ depends on x through $g(x\beta)$, for

$$\frac{\partial p(x)}{\partial x_j} = g(x\beta)\beta_j, \qquad where\ g(z) \equiv \frac{dG}{dz}(z). \qquad \text{(M5)}$$

Since $G(\cdot)$ is a strictly increasing cdf, $g(z) > 0$ for all z. In this case, the sign of the partial effect is directly represented by the sign of β_j.

If the explanatory variable x_k is binary, then the partial effect from changing x_k from zero to one, *ceteris paribus*, is defined as

$$G(\beta_1 + \beta_2 x_2 + \ldots + \beta_{K-1} x_{K-1} + \beta_K) - G(\beta_1 + \beta_2 x_2 + \ldots + \beta_{K-1} x_{K-1}). \qquad \text{(M6)}$$

This expression depends on all other values of the other explanatory variables. However, the sign of β_K is indicative of whether the explanatory variable x_k has a positive or negative effect. To find the magnitude of the effect, we will then need to estimate expression (M6).

To obtain the maximum likelihood estimator, conditional on the explanatory variables, we need to define the density of y_i given x_i as

$$f(y|\ xi;\beta) = [\ G(x_i\beta)\ ]^{y}\,[1 - G(x_i\beta)\ ]^{1-y}, \quad y = 0, 1. \qquad \text{(M7)}$$

The log-likelihood function for observation i is defined as

$$\ell_i\ (\beta) = y_i \log [\ G(x_i\beta)\ ] + (1 - y_i) \log [\ 1 - G(x_i\beta)\ ]. \qquad \text{(M8)}$$

Since $G(\cdot)$ is bounded between zero and one, ℓ_i is well defined for all values of β.

The log-likelihood function for all N observations is thus defined as

$$\mathcal{L}(\beta) = \sum_{i=1}^{N} \ell_i(\beta), \qquad \text{(M9)}$$

and $\hat{\beta}$ is the logistic estimator. This estimator is both consistent and asymptotically normal.

Multinomial Logit

The multinomial logit model is an extension of the logit model for binary outcomes. It deals with unordered responses that have more than two outcomes. We follow the multinomial logit models described in Wooldridge (2002, pp. 497-98).

Let y denote a random variable taking on the values $\{0, 1, \ldots, J\}$ for J a positive integer, and let x denote a set of conditioning variables. The multinomial logit model has response probabilities

$$P(y = j \mid x) = \exp(x\beta_j) / \left[1 + \sum_{h=1}^{J} \exp(x\beta_h)\right], \qquad where\ j = 1, \ldots, J, \quad \text{(M10)}$$

and $P(y = 0 \mid x) = 1 / \left[1 + \sum_{h=1}^{J} \exp(x\beta_h)\right]$ such that the response probabilities sum to unity. When $J = 1$, we get the binary logit model.

If the explanatory variable x_k is continuous, the partial effect for this model is

$$\frac{\partial P(y = j \mid x)}{\partial x_k} = P(y = j \mid x) \left\{ \beta_{jk} - \left[\sum_{h=1}^{J} \beta_{hk} \exp(x\beta_h) \right] / g(x, \beta) \right\}, \qquad \text{(M11)}$$

where β_{hk} is the kth element of β_h and $g(x, \beta) = 1 + \sum_{h=1}^{J} \exp(x\beta_h)$. It is clear from equation (M11) that the direction of the effect is not determined by β_{jk} alone and therefore the partial effect need not have the same sign as β_{jk}.

The log-odds ratio is given as $\log[p_j(x, \beta) / p_0(x, \beta)] = x\beta_j$, and this can be extended to general j and h to obtain $\log[(p_j(x, \beta) / p_h(x, \beta)] = x(\beta_j - \beta_h)$.

We use maximum likelihood to estimate the multinomial logit model. The log-likelihood function for observation i is defined as

$$\ell_i(\beta) = \sum_{j=0}^{J} 1[y_i = j] \log[p_j(x_i, \beta)], \qquad \text{(M12)}$$

where the indicator function picks out the corresponding probability for each observation i. The log-likelihood function for all N observations is similar to equation (M9).

Ordered Logit Model

Ordered responses add a twist to the logit models we have seen earlier. Once again, we follow the model described in Wooldridge (2002, pp. 504 – 506).

Let y denote an ordered response taking on the values {0, 1, 2, ...,J}, where J is some integer. The ordered logit model can be derived from a latent variable model:

$$y^* = x\beta + e, \tag{M13}$$

where x does not contain a constant term. Let $\alpha_1 < \alpha_2 < \ldots < \alpha_J$ be the unknown threshold parameters to be estimated. We define

$$\begin{aligned} y &= 0 && \text{if } y^* \le \alpha_1 \\ y &= 1 && \text{if } \alpha_1 < y^* \le \alpha_2 \\ & && \quad\vdots \\ y &= J && \text{if } y^* > \alpha_J \end{aligned} \tag{M14}$$

If $J = 3$, then we have three threshold parameters.

The response probabilities must sum to unity and they are defined as follows:

$$\begin{aligned} &P(y=0 \mid x) = P(y^* \le \alpha_1 \mid x) = P(x\beta + e \le \alpha_1 \mid x) = \Lambda(\alpha_1 - x\beta), \\ &P(y=1 \mid x) = P(\alpha_1 < y^* \le \alpha_2 \mid x) = \Lambda(\alpha_2 - x\beta) - \Lambda(\alpha_1 - x\beta), \\ &\quad\vdots \\ &P(y=J-1 \mid x) = P(\alpha_{J-1} < y^* \le \alpha_J \mid x) = \Lambda(\alpha_J - x\beta) - \Lambda(\alpha_{J-1} - x\beta), \\ &P(y=J \mid x) = P(y^* > \alpha_J \mid x) = 1 - \Lambda(\alpha_J - x\beta), \end{aligned}$$

where $\Lambda(\cdot)$ is the logit function. When $J = 1$, the threshold parameter is set to zero and as a result we get the binary logit model.

We use maximum likelihood to estimate the parameters α and β. For each observation i, the log-likelihood function is defined as

$$\ell_i(\alpha,\beta) = \begin{array}{l} 1(y_i = 0)\log[\Lambda(\alpha_1 - x_i\beta)] + 1(y_i = 1)\log[\Lambda(\alpha_2 - x_i\beta) - \Lambda(\alpha_1 - x_i\beta)] + \cdots \\ + 1(y_i = J)\log[1 - \Lambda(\alpha_J - x_i\beta)]. \end{array}$$

(M15)

The partial effects of the ordered logit model can be computed based on the followings:

$$\frac{\partial p_0(x)}{\partial x_k} = -\beta_k \lambda(\alpha_1 - x\beta),$$

$$\frac{\partial p_j(x)}{\partial x_k} = \beta_k [\lambda(\alpha_{j-1} - x\beta) - \lambda(\alpha_j - x\beta)], \qquad 0 < j < J, \quad \textit{and}$$

$$\frac{\partial p_J(x)}{\partial x_k} = \beta_k \lambda(\alpha_J - x\beta).$$